

VISIT...

LANZAROTE
Caliente.COM

**RUSSIAN ACADEMY OF SCIENCES
INSTITUTE OF ECOLOGY OF THE VOLGA RIVER BASIN**

State scientific and technical program of Russia
"Biological diversity"

V.B. GOLUB

**HALOPHYTIC, DESERT AND SEMI-DESERT PLANT COMMUNITIES
ON THE TERRITORY OF THE FORMER USSR**

TOGLIATTI
1995

Golub V.B. Halophytic, desert and semi-desert plant communities on the territory of the former USSR. - Togliatti: Institute of Ecology of the Volga River Basin of RAS publishers. 1995 - 32 pp.

The list of halophytic, desert and semi-desert communities as for as association rank for the territory of the former USSR is given. Typification of syntaxa which names haven't been published by author validly is made.

The author is grateful to the members of the Laboratory of Phytocoenology of the Institute of Ecology of the Volga River Basin of RAS T.M. Lysenko, N.V. Koneva, E.V. Kuzmina, A.V. Timofeev for verification of Latin plant names and to N.A. Juritsina for correction the English of the manuscript.

Managing editor -

Professor Dr. G.S. Rozenberg

Голуб В.Б. Галофитные, пустынные и полупустынные растительные сообщества на территории бывшего СССР.

Работа выполнена на средства Государственной научно-технической Программы России "Биологическое разнообразие".

Приведен список галофитных, пустынных и полупустынных растительных сообществ до уровня ассоциаций, установленных для территории бывшего СССР на основе принципов направления Браун-Бланке. Сделана типификация синтаксонов, которые не были опубликованы автором валидно.

The Institute of Ecology of the Volga River Basin of RAS, Komzina 10, Togliatti, Samarskiy region, Russia, 445003, tel. (8469) 48-93-74, telefax (8482) 48-95-04.

С Golub V.B.

Zosteretea marinae Pign. 1953. Communities of phanerogams submerged into sea-water (Korzhenevskiy & Klukin 1990b)

Zosteretalia Beguinot 1941 (ibid.)

Zosterion W.Christ. 1934 (ibid.)

D.s. (diagnostic species) of cl., ord., all.: *Zostera marina* L.

Zosteretum noltii Harms 1936 em. Melzacova et Korzh. in Korzh. et Klukin 1990 (ibid.)

Zosteretum marinae (Borg. 1905) Harms 1936 (ibid.)

Ruppletea J.Tx. 1960. Communities of attached phanerogamous plants submerged into saltish shallow water (Losev & Golub 1988, Golub & Losev 1990, Golub & Losev 1991, Golub et al. 1991)

Ruppletalia J.Tx. 1960 (ibid.)

Ruppion maritima Br.-Bl. 1931 (ibid.)

D.s. of cl., ord., all.: *Ruppia maritima* L.

Ruppletum maritima Beguinot 1941 (ibid.)

Thero-Salicornietea R.Tx. 1954 ap. R.Tx. et Oberd. 1958 em. V.Golub et V.Slkh. 1988. Obligatory halophytic communities of annual succulent species often being pioneer on moisture and wet sites (Golub & Solomakha 1988)

Thero-Salicornietalia R.Tx. 1954 ap. R.Tx. et Oberd. 1958 em. V.Golub et V.Slkh. 1988 (ibid.)

D.s. of cl., ord.: *Salicornia europaea* L. s.l. (incl. *S. prostrata* Pall.), *Suaeda salsa* (L.) Pall.

Thero-Salicornion (Br.-Bl. 1933) R.Tx. 1954 ap. R.Tx. et Oberd. 1958. West European and the Black Sea coast communities of obligatory halophytes with prevalence of non-nitrophyte annual succulents (ibid.)

D.s.: *Salicornia europaea* L. s.l. (incl. *S. prostrata* Pall.)

Salicornietum europaeae (Iversen 1936) W.Christ. 1955 (Rebassoo 1975, 1987)

Salicornietum prostratae Soo' 1927 (Solomakha & Shelyag-Sosonko 1984, Shelyag-Sosonko & Solomakha 1987)

****Petrosimonia oppositifoliae-Salicornietum*** Korzh. et Klukin 1990 (Korzhenevskiy & Klukin 1990b)

****Limonio caspii-Salicornietum*** Korzh. et Klukin 1990 (ibid.)

Suaedion salsae V.Golub et Tchorbadze in V.Golub all. nova.

East European communities of annuals *Salicornia* genus and non-nitrophyte taxa of *Suaeda* genus. Vicarious in relation to the West European *Thero-Salicornion* alliance (Golub & Tchorbadze 1988, Golub & Solomakha 1988)

D.s.: *Salicornia europaea* L. s.l. (incl. *S. prostrata* Pall.), *Suaeda maritima* (L.) Dumort. s.l. (incl. *S. salsa* (L.) Pall., *S. prostrata* Pall.), *S. confusa* Iljin, *S. heterophylla* (Kar. et Kir.) Bunge

N.t. (the nomenclatural type) of the alliance is the *Suaedetum salsae* V.Golub et Tchorbadze in V.Golub ass. nova

* Here and further syntaxa names were not published in accordance to the rules of the Code of Phytosociological Nomenclature (Barkman et al. 1986)

Suaedetum salsae V.Golub et Tchorbadze in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 6 in Table 11 in the manuscript of Golub & Tchorbadze (1988). 2 km S v. Ozernoe Ikryaninskiy distr., Astrakhan region, the lower part of Baer mound slope, S aspect, 5°, 27.VII.85, area analysed - 25 sq. m, total cover - 55%, Suaeda salsa (L.) Pall.-5, Suaeda confusa Iljin-1, Salicornia prostrata Pall.-+, Limonium gmelinii (Willd.) O.Kuntze-+

Suaedo salsae-Salicornietum prostratae V.Golub et Tchorbadze 1988 (Golub & Tchorbadze 1988)

N.t. of the association is the releve 3 in Table 10 in the manuscript of Golub & Tchorbadze (1988). Near v. Bakhtemir, the eastern bank of the Vlasov ilmen, Ikryaninskiy distr., Astrakhan region, Russia, 2.VIII.85, area analysed - 25 sq. m, total cover - 80%, Salicornia prostrata Pall.-5, Suaeda salsa (L.) Pall.-+,

Suaedetum confusae V.Golub et Tchorbadze in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 3 in Table 12 in the manuscript of Golub & Tchorbadze (1988). 2 km SE v. Karavannoe Lymanskiy distr., Astrakhan region, the northern bank of ilmen, 5.VIII.85, area analysed - 2 sq. m, total cover - 20%, Suaeda confusa Iljin-3.

Suaedetum corniculatae Burtseva in Mirkin et al. 1992 (Mirkin et al. 1992)

****Suaedo maritimae-Salicornietum prostratae*** V.Slkh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Suaedetum maritimae Soo 1927 (ibid.)

Thero-Suaedetalia Br.-Bl. et De Bolòs 1957 em. Beeftink 1962. West European and Crimean communities of annual obligatory halophytes and nitrophytes of succulent appearance

D.s.: Suaeda confusa Iljin, S. prostrata Pall.

Thero-Camphorosmion (Bilyk 1963) Vicherek 1973. Communities of annual halophytes and nitrophytes that combine features of succulents and sclerophytes (Korzhenevskiy & Klukin 1990a, Korzhenevskiy & Klukin, 1991)

D.s.: Camphorosma monspeliaca L.

Lepidietum crassifolii Korzh. et Klukin 1991 (Korzhenevskiy & Klukin 1990a, Korzhenevskiy & Klukin 1991)

Petrosimonia brachiatae-Artemisietum santonicae Korzh. et Klukin 1991 (ibid.)

Cakiletea maritimae R.Tx. et Preising 1950. Communities of annual nitro-halophytes of sea beach (Korzhenevskiy & Klukin 1990b)

D.s.: Cakile euxina Pobed., Polygonum maritimum L., Atriplex calotheca (Rafn) Fries

Euphorbietalia pepilis R.Tx. 1950 (ibid.)

Euphorblon pepilis R.Tx. 1950 (ibid.)

D.s. of ord., all.: Euphorbia pepilis L., Xanthium italicum Moretti

****Cakilo euxinae-Salsoletum*** Vicherek 1971 em. Korzh. et Klukin 1990 (ibid.)

#Cakiletum maritimae (Warm. 1909) Nordh. 1940 (Rebassoo 1975, 1987)

Salicornietea fruticosae (Br.-Bl. et R.Tx. 1943) R.Tx. et Oberd. 1958 em. V.Golub et V.Slkh. 1988. Communities of succulent primarily perennial obligatory hyperhalophytes (Golub & Solomakha 1988, Shelyag-Sosonko et al. 1989)

D.s.: Halocnemum strobilaceum (Pall.) Bieb.

Halostachyetalia Topa 1939 em. V.Golub et Tchorbadze 1989. East European and Asian communities of succulent perennial obligatory hyperhalophytes (Golub & Tchorbadze 1987, Golub & Solomakha 1988, Shelyag-Sosonko et al. 1989, Golub & Čorbadze 1989)

D.s.: *Halocnemum strobilaceum* (Pall.) Bieb., *Frankenia hirsuta* L., *Petrosimonia oppositifolia* (Pall.) Litv., *P. brachiata* (Pall.) Bunge, *Limonium caspium* (Willd.) Gams

Artemisio santonicae-Puccinellion fominii Shel. et al. 1989. Communities of obligatory hyperhalophytes of Ukraine (Shelyag-Sosonko et al. 1989)

D.s.: *Puccinellia fominii* Bilyk, *Artemisia santonica* L., *Suaeda maritima* (L.) Dumort., *Limonium caspium* (Willd.) Gams

Petrosimonio oppositifollae-Bassietum sedoidis Shel. et al. 1989 (ibid.)

Puccinellio fominii-Aeluropodetum littoralis Shel. et al. 1989 (ibid.)

Puccinellio fominii-Halimionetum verruciferae Shel. et al. 1989 (ibid.)

Puccinellio fominii-Halocnemetum Shel. et al. 1989 (ibid.)

Obionetum verruciferae Topa 1939 (Topa 1939)

Climacoptero-Suaedion V.Golub et Tchorbadze 1989. Communities of obligatory perennial succulent hyperhalophytes of the Caspian Lowland (Golub & Tchorbadze 1987, Golub & Solomakha 1988, Shelyag-Sosonko et al. 1989, Golub & Čorbadze 1989)

D.s.: *Climacoptera crassa* (Bieb.) Botsch., *Suaeda salsa* (L.) Pall.

Suaedo salsae-Halocnemetum V.Golub et Tchorbadze 1987 (Golub & Tchorbadze 1987, Shelyag-Sosonko et al. 1989, Golub & Čorbadze 1989)

Limonietum suffruticosi V.Golub et Tchorbadze 1989 (ibid.)

Kalidietum foliati V.Golub et Tchorbadze 1989 (ibid.)

Suaedo-Frankenietum V.Golub et Tchorbadze 1989 (ibid.)

Suaedo-Petrosimonietum V.Golub 1986 (Golub 1986, Golub & Mirkin 1986, Golub & Tchorbadze 1987, Golub & Čorbadze 1989, Shelyag-Sosonko et al. 1989)

Climacopterion lanatae Berdiev et V.Golub in V.Golub all. nova. Communities of Turkmenistan with predominance perennial halophytes. Vicarious in relation to the all. *Climacoptero-Suaedion* (Berdiev & Golub 1992)

D.s.: *Climacoptera lanata* (Pall.) Botsch., *Tetradiclis tenella* (Ehrenb.) Litv., *Eremopyrum orientale* (L.) Jaub. et Spach, *Strigosella africana* (L.) Botsch.

N.t. of the alliance is the *Tetradiclido-Petrosimonietum glaucae* Berdiev et V.Golub in V.Golub ass. nova

Climacopterenion lanatae Berdiev et V.Golub in V.Golub suball. nova. Communities of perennial hyperhalophytes of Turkmenistan (ibid.)

D.s. of the suballiance = d.s. of the alliance. N.t. of the suballiance is the *Tetradiclido-Petrosimonietum glaucae* Berdiev et V.Golub in V.Golub ass. nova

Tetradiclido-Petrosimonietum glaucae Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 4 in Table 2 in the manuscript of Berdiev & Golub (1992). 4 km N Muratlar mount, Kyzil-Atrek distr., Balkhan region, Turkmenistan, 17.X.69, area analysed - 100 sq. m, total cover - 25%, *Halocnemum strobilaceum* (Pall.) Bieb.-3, *Tetradiclis tenella* (Ehrenb.) Litv.-2, *Climacoptera lanata* (Pall.) Botsch.-1, *Eremopyrum orientale* (L.) Jaub. et Spach-2, *Strigosella africana* (L.) Botsch.-1, *Petrosimonia glauca* (Pall.) Bunge-3, *Psylliostachys suworowii* (Regel) Roshk.-2

Suaedo-Halimocnematum karelinii Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 1 in Table 3 in the manuscript of Berdiev & Golub (1992). 4 km S Karatogolok mount, Gasan-Kuli distr., Balkhan region, Turkmenistan, 11.X.69, area analysed - 100 sq. m, total cover - 30%, *Halocnemum strobilaceum* (Pall.) Bieb.-3, *Tetradiclis tenella* (Ehrenb.) Litv.-1, *Climacoptera lanata* (Pall.) Botsch.-1, *Eremopyrum orientale* (L.) Jaub. et Spach-1, *Strigosella africana* (L.) Botsch.-1, *Halimocnemis karelinii* Moq.-3, *Suaeda altissima* (L.) Pall.-1, *Psylliostachys suworowii* (Regel) Roshk.-1, *Microcephala lamellata* (Bunge) Pobed.-1, *Petrosimonia glauca* (Pall.) Bunge-1, *Spergularia sperguloides* (Lehm.) Heynh.-1.

Alhagietum persari Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 4 in Table 4 in the manuscript of Berdiev & Golub (1992). 4 km SE v. Chalujuk, Gasan-Kuli distr., Balkhan region, Turkmenistan, 20.X.69, area analysed - 100 sq. m, total cover - 15%, *Halocnemum strobilaceum* (Pall.) Bieb.-2, *Climacoptera lanata* (Pall.) Botsch.-1, *Eremopyrum orientale* (L.) Jaub. et Spach-+, *Strigosella africana* (L.) Botsch.-+, *Alhagi persarum* Boiss. et Buhse-1, *Polygonum acetosum* Bieb.-+, *Suaeda arcuata* Bunge-1, *Eremopyrum triticeum* (Gaertn.) Nevski-+, *Sphenopus divaricatus* (Gouan) Reichenb.-+.

Polygonetum equisetiformis Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 5 in Table 5 in the manuscript of Berdiev & Golub (1992). 3 km N Karadga-Batyr well, Gasan-Kuli distr., Balkhan region, Turkmenistan, 17.X.69, area analysed - 100 sq. m, total cover - 15%, *Halocnemum strobilaceum* (Pall.) Bieb.-2, *Tetradiclis tenella* (Ehrenb.) Litv.-+, *Eremopyrum orientale* (L.) Jaub. et Spach-+, *Polygonum equisetiforme* Sibth. et Smith-1, *Suaeda arcuata* Bunge-1, *Aeluropus litoralis* (Gouan) Parl.-+, *Eremopyrum triticeum* (Gaertn.) Nevski-+, *Polygonum acetosum* Bieb.-1, *Climacoptera turcomanica* (Litv.) Botsch.-+.

Halocnemo-Kalidietum caspicum Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 3 in Table 6 in the manuscript of Berdiev & Golub (1992). 2 km N Muratlar mount, Kyzil-Atrek distr., Balkhan region, Turkmenistan, 17.X.69, area analysed - 100 sq. m, total cover - 20%, *Halocnemum strobilaceum* (Pall.) Bieb.-1, *Climacoptera lanata* (Pall.) Botsch.-1, *Tetradiclis tenella* (Ehrenb.) Litv.-1, *Strigosella africana* (L.) Botsch.-+, *Kalidium caspicum* (L.) Ung.-Sternb.-2, *Polygonum monspeliense* Thieb. ex Pers.-+, *Halimocnemis karelinii* Moq.-+, *Sphenopus divaricatus* (Gouan) Reichenb.-1, *Psylliostachys suworowii* (Regel) Roshk.-+.

Kalidienion caspicum Berdiev et V.Golub in V.Golub suball. nova. Communities of the Meshed-Messerian plain of Turkmenistan primarily on soils having been formed by ancient agricultural irrigation deposits (ibid.)

D.s.: *Kalidium caspicum* (L.), *Polygonum monspeliense* Thieb. ex Pers.

N.t. of the suballiance is the *Gamanthetum gamocarpi* Berdiev et V.Golub in V.Golub ass. nova

Gamanthetum gamocarpi Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 4 in Table 7 in the manuscript of Berdiev & Golub (1992). 10 km W Meshed ruins, Kyzil-Atrek distr., Balkhan region, Turkmenistan, 10.V.70, area analysed - 100 sq. m, total cover - 25%, *Petrosimonia glauca* (Pall.) Bunge-3, *Climacoptera lanata* (Pall.) Botsch.-1, *Eremopyrum*

orientale (L.) Jaub. et Spach-1, Suaeda arcuata Bunge-+, Kalidium caspicum (L.) Ung.-Sternb.-1, Polygonum monspeliense Thieb. ex Pers.-+, Halimocnemis karelinii Moq.-+, Gamanthus gamocarpus (Moq.) Bunge-+, Psylliostachys suworowii (Regel) Roshk.-+, Aeluropus repens (Desf.) Parl.-1.

Zygophylletum lehmanniani Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 9 in Table 8 in the manuscript of Berdiev & Golub (1992). 10 km W Rustam-Kala ruins, Kyzil-Atrek distr., Balkhan region, Turkmenistan, 20.V.81, area analysed - 100 sq. m, total cover - 25%, Climacoptera lanata (Pall.) Botsch.-2, Eremopyrum orientale (L.) Jaub. et Spach-1, Strigosella africana (L.) Botsch.-1, Tetradiclis tenella (Ehrenb.) Litv.-1, Kalidium caspicum (L.) Ung.-Sternb.-2, Polygonum monspeliense Thieb. ex Pers.-1, Zygophyllum lehmannianum Bunge-1, Lepidium perfoliatum L.-1, Halocharis hispida (C.A.Mey.) Bunge-1, Spergularia diandra (Guss.) Heldr. et Sart.-+, Petrosimonia glauca (Pall.) Bunge-1, Suaeda arcuata Bunge-1.

Halocnemo-Haloxylon aphylli Berdiev et V.Golub in V.Golub all. nova. Communities of the south-west part of Turkmenistan on residual saline soils and takyr-like soils are often covered with a thin layer of sand (ibid.)

D.s.: Haloxylon aphyllum (Minkw.) Iljin-3.

N.t. of the alliance is the *Haloxylon-Kalidietum caspici* Berdiev et V.Golub in V.Golub ass. nova

Halocnemo-Haloxyletum aphylli Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 1 in Table 10 in the manuscript of Berdiev & V.Golub (1992). Foot-hill valley of Western Kopetdag, stow Dusly-chay, Kazandginskiy distr., Balkhan region, Turkmenistan, 29.IX.70, area analysed - 100 sq. m, total cover - 5%, Halocnemum strobilaceum (Pall.) Bieb.-1, Haloxylon aphyllum (Minkw.) Iljin-1.

Haloxylon-Kalidietum caspici Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 5 in Table 11 in the manuscript of Berdiev & Golub (1992). Foot-hill plain of Maliy Balkhan mountain ridge (Donatinskiy gate), Kazandginskiy distr., Balkhan region, Turkmenistan, 29.IX.70, area analysed - 100 sq. m, total cover - 3%, Halocnemum strobilaceum (Pall.) Bieb.-+, Haloxylon aphyllum (Minkw.) Iljin-1, Kalidium caspicum (L.) Ung.-Sternb.-1, Aeluropus repens (Desf.) Parl.-+, Climacoptera transoxana (Iljin) Botsch.-+, Suaeda arcuata Bunge-+, Koelpinia linearis Pall.-+.

Aeluropodion littoralis Berdiev et V.Golub in V.Golub all. nova. Meadow solonchaks of Turkmenistan (ibid.)

D.s.: Halostachys caspica (Bieb.) C.A.Mey., Aeluropus littoralis (Gouan) Parl., A. repens (Desf.) Parl., Bolboschoenus maritimus (L.) Palla.

N.t. of the alliance is the *Spergularietum sperguloidis* Berdiev et V.Golub in V.Golub ass. nova

Climacopteretum transoxanae Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 5 in Table 13 in the manuscript of Berdiev & Golub (1992). 1 km SW lake Delili, Gasan-Kuli distr., Balkhan region, Turkmenistan, 17.X.69, area analysed - 100 sq. m, total cover - 15%, Halocnemum strobilaceum (Pall.) Bieb.-1, Halostachys caspica (Bieb.) C.A.Mey.-2, Aeluropus littoralis (Gouan) Parl.-+, A. repens (Desf.) Parl.-+, Bolboschoenus maritimus (L.) Palla.-+, Climacoptera transoxana (Iljin) Botsch.-1, Suaeda turkestanica Litv.-1, Strigosella brevipes (Bunge) Botsch.-+, Polygonum acetosum Bieb.-+, Sphenopus divaricatus (Gouan) Reichenb.-+.

Spergularietum sperguloidis Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 1 in Table 14 in the manuscript of Berdiev & Golub (1992). 4 km S v. Yarymytk, Kyzil-Atrek distr., Balkhan region, Turkmenistan, 1.IX.69, area analysed - 100 sq. m, total cover - 95%, *Halocnemum strobilaceum* (Pall.) Bieb.-2, *Frankenia hirsuta* L.- +, *Aeluropus littoralis* (Gouan) Parl.-4, *Halostachys caspica* (Bieb.) C.A.Mey.-3, *Bolboschoenus maritimus* (L.) Palla-3, *Spergularia sperguloides* (Lehm.) Heynh.-1.

Calamagrostietum dublae Berdiev et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve 3 in Table 15 in the manuscript of Berdiev & Golub (1992). 2 km N lake Delili, Gasan-Kuli distr., Balkhan region, Turkmenistan, 11.X.69, area analysed - 100 sq. m, total cover - 10%, *Halocnemum strobilaceum* (Pall.) Bieb.-1, *Aeluropus littoralis* (Gouan) Parl.-1, *A. repens* (Desf.) Parl.-1, *Bolboschoenus maritimus* (L.) Palla-1, *Calamagrostis dubia* Bunge-+, *Polygonum acetosum* Bieb.-+.

All.?

Kalidietum caspici Tschernova et V.Golub in V.Golub ass. nova (Tschernova & Golub 1992)

N.t. of the association is the releve 4 in Table 2 in the manuscript of Tschernova & Golub (1992). Western shore of lake Sarakamysh, Tashauz region, Turkmenistan, 31.V.90, area analysed - 1000 sq. m, total cover - 60%, *Kalidium caspicum* (L.) Ung.-Sternb.-5.

Juncetea maritimi Br.-Bl. et al. 1952 em. Beeftink 1965. Communities of swamp meadows on moisture seacoast sites in the southern part of Europe on low- and medium-salinized soils (Golub & Solomakha 1988)

Juncetalia maritimi Br.-Bl. 1931 em. Beeftink 1965 (ibid.)

D.s. of cl., ord.: *Juncus maritimus* Lam., *Carex extensa* Good.

Limonio gmelinii-Juncion maritimi V.Golub et V.Slkh. 1988. Communities of swamp meadows on the Black Sea and the Sea of Azov coasts of Ukraine (ibid.)

D.s.: *Limonium gmelinii* (Willd.) O.Kuntze s.l. (incl. *L. meyeri* (Boiss.) O.Kuntze)

Plantaginis salsae-Juncetum maritimi V.Slkh. et Shel. 1987 (Shelyag-Sosonko & Solomakha 1987)

syn.: ***Juncetum maritimi*** V.Slkh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984, Golub & Solomakha 1988)

****Phragmito-Juncetum maritimae*** Korzh. et Klukin 1990 (Korzhenevskiy & Klukin 1990b)

Crypsietea aculeatae Vicherek 1973. Communities mainly of annual species on sites with greatly variable regime of moisture and salinity of upper layers of soil (Golub & Mirkin 1986, Golub & Solomakha 1988)

Crypsietalia aculeatae Vicherek 1973. Communities mainly of annual species on sites with greatly variable regime of moisture and salinity of upper layers of soil in forest-steppe and steppe areas (Golub & Mirkin 1986, Golub & Solomakha 1988, Agafonov & Golub 1990)

D.s. of cl., ord.: *Crypsis aculeata* (L.) Ait., *C. schoenoides* (L.) Lam., *Spergularia marina* (L.) Griseb., *Chenopodium glaucum* L.

****Polygonum salsuginei-Crypsion aculeatae*** Korzh. et Klukin 1991.

Communities of depressions on surface of mud-volcanic "lava" in the Crimea (Korzhenevskiy & Klukin 1990a)

D.s.: *Polygonum salsugineum* Bieb., *Limonium gmelinii* (Willd.) O.Kuntze, *Rumex stenophyllus* Ledeb.

****Polygono salsuginei-Crypsietum aculeatae*** Korzh. et Klukin 1990 (ibid.)

All.?

Atriplici littoralis-Puccinellietum bilykianae Agafonov et V.Golub in V.Golub ass. nova (Agafonov & Golub 1990)

N.t. of the association is the releve' 1 in Table 1 in the manuscript of Agafonov & Golub (1990) 2 km SE v. Verkhnyaya Matrenka, Dobrinskiy distr., Lipesk region, Russia, 21.VII.88, area analysed - 5 sq. m, total cover - 50%, *Crypsis schoenoides* (L.) Lam.-3, *Chenopodium glaucum* L.- 1, *Puccinellia bilykiana* Klok.-1, *Atriplex littoralis* L.-+, *Atriplex hastata* L., *Polygonum junceum* Ledeb.-1, *Rumex stenophyllus* Ledeb.-+, *Agrostis stolonifera* L.-1, *Pulicaria vulgaris* Gaertn.-+, *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.-2, *Polygonum arenastrum* Boreau-+.

Lepidietalia latifolii V.Golub et V.Sikh. in V.Golub ord. novus.

Communities of meadow solonchaks in desert flooded by fresh water for a long time during flooding (Golub & Solomakha 1988)

N.t. of the order is the *Lepidion latifolii* V.Golub et Mirk. in V.Golub

Lepidion latifolii V.Golub et Mirk. in V.Golub all. nova (Golub & Mirkin 1986, Golub & Solomakha 1988)

D.s. of ord., all.: *Lepidium latifolium* L., *Atriplex prostrata* Boucher, *Polygonum pulchellum* Loisel., *Bolboschoenus maritimus* (L.) Palla

N.t. of the *Lepidion latifolii* is the *Alismato-Salicornietum* V.Golub 1985

Alismato-Salicornietum V.Golub 1985 (Golub 1985, Golub & Mirkin 1986, Golub & Tchorbadze 1988)

Argusio-Phragmitetum V.Golub et Mirk. 1986 (Golub & Mirkin 1986)

Ord.?

All.?

Limonio-Crypsietum V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1989)

N.t. of the association is the releve' 311 in Table 43a in the book of Krasheninnikov et al. (1928)

Bolboschoenetea maritimi Vicherek et R.Tx. 1969 ex R.Tx. et Hülb. 1971. Poor, often pioneer plant communities that grow in brackish water or on salinized soil periodically covered by water (Golub 1983, Golub & Mirkin 1986, Golub & Solomakha 1988, Golub & Losev 1990b, 1991, Golub et al. 1991)

Bolboschoenetalia Hejný in Holub et al. 1967 (ibid.)

Scirpion maritimi Dachl et Hadač 1941 (ibid.)

D.s. of cl., ord., all.: *Bolboschoenus maritimus* (L.) Palla, *Scirpus tabernaemontani* C.C.Gmel.

Bolboschoenetum maritimi (Warm. 1906) R.Tx. 1937 em. Reb. 1987 (Rebassoo 1975, 1987)

Bolboschoenetum maritimi Soó 1928 em. Gogol. et al. 1987 (Gogoleva et al. 1987a)

Tripollo vulgaris-Bolboschoenetum maritimi Shel. et V.Sikh. 1987 (Shelyag-Sosonko & Solomakha 1987)

syn.: *Bolboschoenetum maritimi* (Warm. 1906) R.Tx. 1937 em. V.Sikh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Rhaponticetum serratuloidis V.Golub et Saveljeva 1991 (Saveljeva & V.Golub 1990, V.Golub & Saveljeva 1991b)

Typhion laxmannii Losev et V.Golub in V.Golub et al. 1991. Communities of herbaceous swamps of the Volga delta with salinized soil (Losev & Golub 1988, Golub & Losev 1990b, 1991, Golub et al. 1991)

D.s.: *Typha laxmannii* Lepech., *Tripolium pannonicum* (Jacq.) Dobrocz.

Phragmito-Typhetum laxmannii Losev et V.Golub in V.Golub et al. 1991 (Losev & Golub 1988, Golub & Losev 1990b, Golub et al. 1991)

Bolboschoenetum popovii Losev et V.Golub in V.Golub et al. 1991 (ibid.)

****Puccinello-Phragmiton*** Gogol. et al. 1987. Communities of ruderal moist sites on salinized soils in Yakutia (Gogoleva et al. 1987a)

D.s.: *Puccinellia tenuiflora* (Griseb.) Scribn. et Merr.

****Salicornio-Phragmitetum*** Gogol. et al. 1987 (ibid.)

****Hordeo-Phragmitetum*** Gogol. et al. 1987 (ibid.)

Molinio-Arrhenatheretea R.Tx. 1937 em. Mirk. et Naum. 1986 Communities of post-forest primarily glycophyte meadows of Euro-Asia (Mirkin & Naumova 1986, Denisova & Mirkin 1992)

D.s.: *Bromopsis inermis* (Leys.) Holub, *Elytrigia repens* (L.) Nevski, *Vicia cracca* L., *Ranunculus acris* L., *Festuca pratensis* Huds., *Achillea millefolium* L., *Trifolium pratense* L., *Inula britannica* L., *Lotus corniculatus* L., *Leucanthemum vulgare* Lam., *Phleum pratense* L., *Agrostis gigantea* Roth, *Stellaria graminea* L., *Pimpinella saxifraga* L., *Geranium pratense* L., *Alopecurus pratensis* L., *Centaurea jacea* L.

Althetalia officinalis V.Golub et Mirk. in V.Golub. Communities of meadows of the Lower Volga valley and surrounding limans (basins without outflow) on low- and medium-salinized soil flooded during flood-times for a long time (Golub & Mirkin 1986, Golub & Solomakha 1988)

N.t. of the order is the ***Althion officinalis*** V.Golub et Mirk. in V.Golub

Althion officinalis V.Golub et Mirk. in V.Golub all. nova (ibid.)

D.s. of ord., all.: *Althaea officinalis* L., *Carex melanostachya* Bieb. ex Willd., *Hierochloë repens* (Host) Beauv.

N.t. of the ***Althion officinalis*** is the ***Bolboschoeno-Glycyrrhizetum echinatae*** V.Golub et Mirk. 1986

Bolboschoeno-Inuletum britannicae V.Golub et Mirk. 1986 (Golub & Mirkin 1986)

Polygono-Aeluropodetum pungentis V.Golub et Mirk. 1986 (ibid.)

Bolboschoeno-Glycyrrhizetum echinatae V.Golub et Mirk. 1986 (ibid.)

Euphorbion palustris et V.Golub in V.Golub all. nova. Communities of long flood-plain situations in the steppe part of the Ural river valley on low- and medium-salinized soils (Ageleuov & Golub 1989)

D.s.: *Euphorbia palustris* L., *Juncus gerardii* Loisel., *Carex vulpina* L., *C. muricata* L., *C. atherodes* Spreng., *Gratiola officinalis* L.

N.t. of the alliance is the ***Eleocharito-Butometum umbellati*** Ageleuov et V.Golub in V.Golub ass. nova

Eleocharito-Butometum umbellati Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 2 in Table 3 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Vladimirovka, Uralsk region, Kazakhstan, 12.VI.64, area analysed - 100 sq. m, total cover - 100%, *Elytrigia repens* (L.) Nevski-3, *Carex melanostachya* Bieb. ex Willd.-2, *Bolboschoenus*

maritimus (L.) Palla-1, Euphorbia palustris L.-1, Carex vulpina L.-1, C. muricata L.-3, Butomus umbellatus L.-1, Cirsium palustre (L.) Scop.-1, Artemisia abrotanum L.-1, Carex leporina L.-1, Euphorbia waldsteinii (Sojak) Czer.-1, Lysimachia vulgaris L.-1.

Elytrigio-Beckmannietum eruciformis Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve' 1 in Table 4 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Krestovskiy, Orenburg region, Russia, 25.VI.64, area analysed - 100 sq. m, total cover - 100%, Elytrigia repens (L.) Nevski-4, Inula britannica L.-1, Vicia cracca L.-1, Carex melanostachya Bieb. ex Willd.-1, Bolboschoenus maritimus (L.) Palla-3, Euphorbia palustris L.-1, Carex vulpina L.-1, Beckmannia eruciformis (L.) Host-1, Lythrum virgatum L.-1, Artemisia abrotanum L.-1, Acroptilon repens (L.) DC.-1, Phalaroides arundinacea (L.) Rauschert-1, Plantago maxima Juss. ex Jacq.-1.

All.?

Bolboschoeno-Tripolietum pannonicum V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1989)

N.t. of the association is the releve' 862 in Table 33a in the book of Krasheninnikov et al. (1928)

Potentillo-Glycyrrhizetum echinatae V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the releve' 92 in Table 18 in the book of Krasheninnikov et al. (1928)

Vicio-Iridetum pseudacori V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the releve' 249 in Table 16 in the book of Krasheninnikov et al. (1928)

Molinietalia Koch 1926. Moist meadows (Mirkin & Naumova 1986, Denisova & Mirkin 1992)

Eleocharition Mirk. et Naum. 1986. Meadows of steppe and semi-desert with greatly variable regime of moisture on the territory of the Volga river basin (Mirkin & Naumova 1986)

D.s.: Eleocharis palustris (L.) Roem. et Schult., Gratiola officinalis L., Stachys palustris L., Euphorbia palustris L., Asparagus officinalis L., Hierochloë repens (Host) Beauv.

Rumici-Tragopogonetum orientalis V.Golub et Mirk. 1986 (Golub & Mirkin 1986)

Stachyo-Achilletum septentrionalis V.Golub et Mirk. 1986 (ibid.)

Beckmannio-Caricetum melanostachyae V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1988, 1991a)

N.t. of the association is the releve' 2 in Table 3 in the manuscript of Golub & Saveljeva (1988). Khoper river valley, 4 km N v. Padok, Podtelkovskiy distr., Volgograd region, Russia, 14.VI.88, area analysed - 100 sq. m, total cover - 100%, Elytrigia repens (L.) Nevski-5, Vicia cracca L.-1, Achillea cartilaginea Ledeb.-1, Carex vulpina L.-1, Mentha arvensis L.-1, Eleocharis palustris (L.) Roem. et Schult.-1, Stachys palustris L.-1, Carex melanostachya Bieb. ' ex Willd.-1, Beckmannia eruciformis (L.) Host-1, Rorippa brachycarpa (C.A.Mey.) Hayek-1, Poa palustris L.-1, Ranunculus polyanthemus L.-1, Cirsium arvense (L.) Scop.-1, Allium angulosum L.-1, Agrostis stolonifera L.-1, Galium articulatum Lam.-1, Polygonum patulum Bieb.-1.

Bolboschoeno-Phragmitetum australis V.Golub et Saveljeva in V.Golub ass. nova. (Golub & Saveljeva 1989)

N.t. of the association is the relevé 682 in Table 3 in the book of Krasheninnikov et al. (1928).

Rumici crispi-Eleocharitetum palustris Saveljeva et V.Golub 1991 (Saveljeva & Golub 1990, Golub & Saveljeva 1991b)

Arrhenatheretalia Pawl. 1928. Mesophytic meadows (Mirkin & Naumova 1986)

D.s. of the order = d.s. of the class

Glycyrrhizon echinatae V.Golub et Saveljeva in V.Golub all. nova. Mesophytic meadows on the territory of the Lower Don valley (Golub & Saveljeva 1989)

D.s.: *Carex praecox* Schreb., *Glycyrrhiza echinata* L., *Althaea officinalis* L., *Potentilla reptans* L., *Asparagus officinalis* L., *Euphorbia uralensis* Fisch. ex Link, *Carex melanostachya* Bieb. ex Willd., *Lythrum virgatum* L., *Senecio jacobaea* L.

N.t. of the alliance is the *Glycyrrhizo echinatae-Caricetum praecocis* V.Golub et Saveljeva in V.Golub ass. nova

Rumici crispi-Plantaginetum majoris V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 347 in Table 27 in the book of Krasheninnikov et al. (1928).

Glycyrrhizo echinatae-Caricetum praecocis V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 289 in Table 28 in the book of Krasheninnikov et al. (1928)

Eringlo-Artemisietum ponticae V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 557 in Table 28 in the book of Krasheninnikov et al. (1928)

Iridetum halophilae V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 152 in Table on the page 327 in the book of Krasheninnikov et al. (1928)

Galletalia veri Mirk. et Naum. 1986. Steppe meadows on the territory of Eastern Europe and Siberia (Mirkin & Naumova 1986, Denisova & Mirkin 1992)

Artemision ponticae V.Golub et Saveljeva in V.Golub all. nova.

Steppe meadows on the territory of the south parts of Eastern Europe and Western Siberia and the north part Kazakhstan (Golub & Saveljeva 1988, 1991a)

D.s.: *Artemisia pontica* L., *Juncus gerardii* Loisel., *Eryngium planum* L., *Silaum silaus* (L.) Schinz et Thell., *Tragopogon dasyrhynchus* Artemcz., *Geranium collinum* Steph., *Cichorium intybus* L., *Limonium tomentellum* (Boiss.) O.Kuntze, *Fritillaria meleagroides* Patrin ex Schult. et Schult. fil.

N.t. of the alliance is the *Carici praecocis-Artemisietum ponticae* V.Golub et Saveljeva in V.Golub ass. nova

Carici praecocis-Artemisietum ponticae V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 8 in Table 4 in the manuscript of Golub & Saveljeva (1988). The Don river valley, 7 km SW v. Ilovlya, Ilovlinitskiy distr., Volgograd region, Russia, 23.VI.81, area analysed - 100 sq. m, total cover - 100%, *Bromopsis inermis* (Leys.) Holub-1, *Alopecurus pratensis* L.-2, *Vicia cracca* L.-2, *Elytrigia repens* (L.) Nevski-1, *Lotus corniculatus* L.-1, *Poa angustifolia* L.-2, *Galium verum* L. s.l. (incl. *G. ruthenicum* Willd.)-1, *Artemisia pontica* L.-1, *Tragopogon dasyrhynchus* Artemcz.-1, *Silaum silaus* (L.) Schinz et Thell.-1, *Cichorium intybus* L.-1, *Juncus gerardii* Loisel.-1, *Fritillaria meleagroides* Patrin ex Schult. ex Schult. fil.-1, *Carex praecox* Schreb.-3, *Phlomis tuberosa* L.-1,

Senecio jacobaea L.-1, *Rorippa brachycarpa* (C.A.Mey.) Hayek-1, *Plantago maxima* Juss. ex Jacq.-1, *Eleocharis palustris* (L.) Roem. et Schult.-1, *Ranunculus polyanthemos* L.-1, *Arabidopsis toxophylla* (Bieb.) N.Busch-1, *Rumex crispus* L.-1, *Carex melanostachya* Bieb. ex Willd.-1, *Allium angulosum* L.-1, *Butomus umbellatus* L.-1, *Calamagrostis epigeios* (L.) Roth-1, *Crepis tectorum* L.-1, *Potentilla reptans* L.-1.

Plantagini maximae-Artemisietum ponticae V.Golub ass. nova (Mirkin et al. 1991)

N.t. of the association is the releve' 3 in Table 20 in the manuscript of Prokopiev (1990). The left bank of the Irtysh river, the medium ridge in the central part of flood-plain, near v. Karaman, Novo-Varshavskiy distr., Omsk region, 15.VI.74., area analysed - 75 sq. m, *Elytrigia repens* (L.) Nevski-1, *Bromopsis inermis* (Leys.) Holub-4, *Ranunculus acris* L.-1, *Poa angustifolia* L.-2, *Potentilla argentea* L.-1, *Artemisia pontica* L.-2, *Plantago maxima* Juss. ex Jacq.-1, *Carex praecox* Schreb.-3, *Filipendula ulmaria* (L.) Maxim.-1, *Cnidium dubium* (Schkuhr) Thell.-4, *Taraxacum officinale* Wigg.-4, *Alopecurus arundinaceus* Poir.-2, *Potentilla anserina* L.-1, *Sanguisorba officinalis* L.-2, *Galium boreale* L.-3, *Plantago cornuti* Gouan-1, *Ranunculus polyanthemos* L.-2, *Sedum telephium* L.-1, *Carex disticha* Huds.-1, *Gentiana pneumonanthe* L.-1, *Lathyrus palustris* L.-1, *Rumex acetosa* L.-1, *Polygala comosa* Schkuhr-1.

Trifolio-Koelerietum delavignei V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1988, 1991a)

N.t. of the association is the releve' 1 in Table 5 in the manuscript of Golub & Saveljeva (1988). The Ilovlya river valley, 3 km S v. Olkhovka, Olkhovskiy distr., Volgograd region, Russia, 4.VII.80, area analysed - 100 sq. m, total cover - 100%, *Alopecurus pratensis* L.-1, *Elytrigia repens* (L.) Nevski-4, *Trifolium pratense* L.-1, *Vicia cracca* L.-2, *Festuca pratensis* Huds.-1, *Lotus corniculatus* L.-2, *Taraxacum officinale* Wigg.-1, *Poa angustifolia* L.-2, *Koeleria delavignei* Czern. ex Domin-1, *Fritillaria meleagroides* Patrin ex Schult. et Schult. fil.-1, *Juncus gerardii* Loisel.-1, *Eryngium planum* L.-1, *Silaum silaus* (L.) Schinz et Thell.-1, *Tragopogon dasyrhynchus* Artemcz.-1, *Geranium collinum* Steph.-1, *Cichorium intybus* L.-1, *Limonium tomentellum* (Boiss.) O.Kuntze-1, *Cirsium esculentum* (Siev.) C.A.Mey.-1, *Calamagrostis epigeios* (L.) Roth-1, *Plantago maxima* Juss. ex Jacq.-1, *Sanguisorba officinalis* L.-1, *Rumex thyrsiflorus* Fingerh.-1, *Poa bulbosa* L.-1, *Galatella novopokrovskii* Zefir.-1, *Pedicularis dasystachys* Schrenk-1, *Rhaponticum serratuloides* (Georgi) Bobr.-1, *Beckmannia eruciformis* (L.) Host-1, *Puccinellia dolicholepis* V.Krecz.-1.

Dauco-Festucetum regelianae V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1989)

N.t. of the association is the releve' 26 in Table 46 in the book of Krasheninnikov et al. (1928)

Inulo-Caricetum praecocis Saveljeva et V.Golub 1991 (Saveljeva & Golub 1990, Golub & Saveljeva 1991b)

Seselion Ageleuov et V.Golub in V.Golub all. nova. Steppe meadows of the lower reaches of the Ural river valley flooded for a short time (Ageleuov & Golub 1989)

N.t. of the alliance is the *Carici leporinae-Festucetum pratensis* Ageleuov et V.Golub in V.Golub ass. nova

Seselenion Ageleuov et V.Golub in V.Golub all. nova (ibid.)

D.s. of all., suball.: *Seseli libanotis* (L.) Koch, *Phlomis tuberosa* L., *Glycyrrhiza glabra* L., *Convolvulus arvensis* L., *Asparagus officinalis* L.

N.t. of the suballiance is the *Carici leporinae-Festucetum pratensis* Ageleuov et V.Golub in V.Golub ass. nova

Carici leporinae-Festucetum pratensis Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 3 in Table 5 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Verkhnyaya Pavlovka, Orenburg region, Russia, 25.VI.68, area analysed - 100 sq. m, total cover - 100%, *Elytrigia repens* (L.) Nevski-3, *Bromopsis inermis* (Leys.) Holub-2, *Inula britannica* L.-1, *Alopecurus pratensis* L.-1, *Festuca pratensis* Huds.-1, *Galium verum* L.-1, *Lathyrus pratensis* L.-1, *Seseli libanotis* (L.) Koch-1, *Phlomis tuberosa* L.-1, *Convolvulus arvensis* L.-1, *Carex leporina* L.-2, *Artemisia abrotanum* L.-1, *Lathyrus tuberosus* L.-1, *Galium boreale* L.-1, *G. rubioides* L.-1, *Carex melanostachya* Bieb. ex Willd.-2, *Rumex acetosa* L.-1, *Sanguisorba officinalis* L.-1, *Taraxacum officinale* Wigg.-1, *Rorippa brachycarpa* (C.A.Mey.) Hayek-1, *Euphorbia waldsteinii* (Soják) Czer. comb. nova-1, *Lycopus exaltatus* L. fil.-1, *Filipendula ulmaria* (L.) Maxim.-1, *Lythrum virgatum* L.-1, *Lactuca tatarica* (L.) C.A.Mey.-1, *Potentilla bifurca* L.-1, *Achillea ptarmica* L.-1, *Cirsium oleraceum* (L.) Scop.-1, *Descurainia sophia* (L.) Webb ex Prantl-1, *Potentilla anserina* L.-1.

Elytrigio-Calamagrostietum epigeli Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 4 in Table 6 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Sugur, Uralsk region, Kazakhstan, 17.VI.64, area analysed - 100 sq. m, total cover - 70%, *Elytrigia repens* (L.) Nevski-1, *Bromopsis inermis* (Leys.) Holub-1, *Vicia cracca* L.-1, *Galium verum* L.-1, *Seseli libanotis* (L.) Koch-1, *Glycyrrhiza glabra* L.-1, *Asparagus officinalis* L.-1, *Calamagrostis epigaeos* (L.) Roth-3, *Artemisia abrotanum* L.-1, *Carex melanostachya* Bieb. ex Willd.-1, *Rumex acetosa* L.-1, *Tragopogon brevirostris* DC.-1.

Centaurenion jaceae Ageleuov et V.Golub in V.Golub all. nova. Steppe meadows of the lower reaches of the Ural river valley rarely flooded (ibid.)

D.s.: *Centaurea jacea* L., *Artemisia austriaca* Jacq., *Carex praecox* Schreb., *Potentilla bifurca* L., *Festuca rubra* L., *Medicago falcata* L., *Eryngium planum* L., *Koeleria cristata* (L.) Pers.

N.t. of the suballiance is the *Eremogonetum saxatilis* Ageleuov et V.Golub in V.Golub ass. nova

Eremogonetum saxatilis Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 3 in Table 7 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Ilek, Orenburg region, Russia, 1.VIII.64, area analysed - 100 sq. m, total cover - 100%, *Bromopsis inermis* (Leys.) Holub-2, *Festuca pratensis* Huds.-1, *Alopecurus pratensis* L.-4, *Vicia cracca* L.-1, *Galium verum* L.-1, *Lathyrus pratensis* L.-1, *Phlomis tuberosa* L.-1, *Convolvulus arvensis* L.-1, *Glycyrrhiza glabra* L.-2, *Asparagus officinalis* L.-1, *Centaurea jacea* L.-1, *Artemisia austriaca* Jacq.-1, *Potentilla bifurca* L.-1, *Festuca rubra* L.-1, *Eremogone saxatilis* (L.) Ikonn.-1, *Taraxacum officinale* Wigg.-1, *Peucedanum alsaticum* L.-1, *Carex leporina* L.-1, *Poa pratensis* L.-1, *Cichorium intybus* L.-1, *Melilotus albus* Medik.-1, *Plantago major* L.-1, *Sanguisorba officinalis* L.-1, *Thalictrum minus* L.-1, *Trifolium montanum* L.-1.

Eremogono longifoliae-Agropyretum pectinati Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve´4 in Table 8 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Kuvandyk, Orenburg region, Russia, 4.VII.68, area analysed - 100 sq. m, total cover - 70%, Bromopsis inermis (Leys.) Holub-3, Alopecurus pratensis L. -1, Galium verum L.-1, Phlomis tuberosa L.-1, Seseli libanotis (L.) Koch-1, Asparagus officinalis L.-1, Convolvulus arvensis L. -1, Carex praecox Schreb.-1, Centaurea jacea L.-1, Artemisia austriaca Jacq.-1, Festuca rubra L.-1, Koeleria cristata (L.) Pers.-1, Agropyron pectinatum (Bieb.) Beauv.-4, Eremogone longifolia (Bieb.) Fenzl-1, Festuca pseudovina Hack. ex Wiesb.-1, Rumex confertus Willd.-1, Falcaria vulgaris Bernh.-1, Festuca valesiaca Gaudin-1, Lappula squarrosa (Retz.) Dumort.-1, Hedysarum gmelinii Ledeb.-1, Medicago romanica Prod.-1, Oxytropis ambigua (Pall.) DC.-1.

Asteretea tripolium Westhoff et Beeftink in Beeftink 1962. Communities with predominance of perennial herbaceous plants (hemicryptophytes) of non-succulent character on low- and medium-salinized soils with medium moisture conditions (Golub & Solomakha 1988, Golub 1994a)

D.s.: Juncus gerardii Loisel., J. salsuginosus Turcz. ex E.Mey., Triglochin maritimum L., Potentilla anserina L., Agrostis stolonifera L., A. divaricatissima Mez, Plantago maritima L. s.l.(incl. P. salsa Pall.), Glaux maritima L., Puccinellia bilykiana Klok., P. gigantea (Grossh.) Grossh., P. tenuissima Litv. ex V.Krecz., P. dolicholepis V.Krecz., P. tenuiflora (Griseb.) Scribn. et Merr., P. syvaschica Bilyk

Glauco-Puccinellietalia Beeftink et Westhoff in Beeftink 1962. Communities of perennial herbaceous plants of northern and north-western sea-coasts of Europe (ibid.)

D.s.: Juncus gerardii Loisel., Triglochin maritimum L., Agrostis stolonifera L., Plantago maritima L., Glaux maritima L.

Puccinellion maritimae (W.Christ. 1927) R.Tx. 1937. Poor pioneer communities of sea-coasts flooded by sea water of the Atlantic Ocean and the Baltic Sea (Rebassoo 1987)

D.s.: Puccinellia maritima (Huds.) Parl.

#*Triglochinnetum maritimi* Du Rietz 1925 em. Reb. 1987 (Rebassoo 1975, Rebassoo 1987)

#*Puccinellietum maritimae* Christ. 1927 em. Reb. 1975 (ibid.)

#*Spergularietum salinae* R.Tx. et Volk 1937 em. Reb. 1975 (ibid.)

Eleochariton uniglumis Siira 1970 em. Reb. 1987. Poor plant communities with predominance of annuals on the Baltic Sea coast (Rebassoo 1987)

D.s.: Eleocharis uniglumis (Link) Schult.

#*Eleocharitetum uniglumis* Nordh. 1923 em. Reb. 1975 (Rebassoo 1975)

Armerion maritimae Br.-Bl. et De Leeuw 1936. Meadow plant communities on low-salinized soils of the Atlantic Ocean and the Baltic Sea coasts (Rebassoo 1987, Balevičienė 1991)

D.s.: Juncus gerardii Loisel., Glaux maritima L., Scirpus tabernaemontani C.C.Gmel., Festuca rubra L.

#*Glauco maritimae-Juncetum gerardii* (Nordh. 1923) Mahn et Schub. 1962 em. Reb. 1975 (Rebassoo 1975, 1987)

#Hierochletum odoratae*** (Almq. 1929) Reb. 1975 (ibid.)

#Caricetum distichae*** (Almq. 1929) Reb. 1975 (ibid.)

#*Elytrigietum repentis* Nordh. 1940 em. Reb. 1975 (ibid.)

#*Festucetum rubrae (Almq. 1929) Reb. 1975 (ibid.)

#*Festucetum arundinaceae (Dahlb. 1945) Reb. 1975 (ibid.)

Juncetum gerardii Nordh. 1923 (Balevičienė 1991)

Triglochino-Glaucetum maritimae Wilk-Mich 1963 (Lazdauskaite 1985, Balevičienė 1991)

Cirsietalia esculenti Mirk. et V.Golub in V.Golub 1994. Meadows of river valleys and less frequently in watershed depressions in forest-steppe and steppe areas of Eastern Europe and Western Siberia on medium-salinized soils (Golub & Solomakha 1988, Golub 1994a)

Cirsion esculenti V.Golub 1994. Mesophytic meadows in the very East of Europe and Western Siberia which are formed on river flood-plains under considerable impact of pasturing

D.s. of ord., all.: *Cirsium esculentum* (Siev.) C.A.Mey., *Taraxacum officinale* Wigg., *Elytrigia repens* (L.) Nevski, *Alopecurus arundinaceus* Poir., *Plantago cornuti* Gouan, *Poa angustifolia* L.

Cnidio-Poetum angustifoliae V.Golub 1994 (Mirkin et al. 1991, Golub 1994a)

Carici stenophyllae-Trifolietum fragiferi V.Golub ass. nova (ibid.)

N.t. of the association is the releve² in Table 11 in the manuscript of Prokopiev (1990). The right bank of the Irtysh river, the ancient flood-plain in the terrace-adjacent part, near v. Azovka, Tavricheskiy distr., Omsk region, Russia, 29.V.73., area analysed - 75 sq. m, *Cirsium esculentum* (Siev.) C.A.Mey.-2, *Potentilla anserina* L.-2, *Elytrigia repens* (L.) Nevski-1, *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.-4, *Poa angustifolia* L.-5, *Alopecurus arundinaceus* Poir.-1, *Bromopsis inermis* (Leys.) Holub-1, *Trifolium fragiferum* L.-3, *Carex stenophylla* Wahlenb.-2, *Artemisia nitrosa* Web. ex Stechm.-2, *Cnidium dubium* (Schkuhr) Thell.-2, *Iris halophila* Pall.-2.

Puccinellio distantis-Glaucetum maritimae V.Golub ass. nova (ibid.)

N.t. of the association is the releve⁶ in Table 33 in the manuscript of Prokopiev (1990). The left bank of the Irtysh river, the low ridge in the terrace-adjacent part of the flood-plain, 2 km NW v. Pristanskoe, Tavricheskiy distr., Omsk region, Russia, 10.VI.74., area analysed - 75 sq. m, *Triglochin maritimum* L.-3, *Juncus gerardii* Loisel-1, *Potentilla anserina* L.-4, *Taraxacum officinale* Wigg.-+, *Alopecurus arundinaceus* Poir.-+, *Plantago cornuti* Gouan-+, *Glaux maritima* L.-3, *Puccinellia distans* (Jacq.) Parl.-3, *Plantago major* L.-+, *Ranunculus repens* L.-+.

Junco gerardii-Agrostietum albae (D.R. 1925) R.Tx. 1950 em. Klotz et Köck 1984 (Klotz & Köck 1984)

***Hordeo-Caricetum aspratilis** Koroluk 1993 (Koroluk 1993)

Geranion collini V.Golub et Saveljeva in V.Golub 1994. Wet meadows of forest-steppe and steppe areas in the European part of Russia and Western Siberia. (Golub & Saveljeva 1988, 1991, Golub & Solomakha 1988, Golub 1994a)

Geranienion collini V.Golub 1994 (Golub 1994a)

D.s. of all., suball.: *Geranium collinum* Steph., *Eleocharis palustris* (L.) Roem. et Schult., *Phragmites australis* (Cav.) Trin. ex Steud.

Lythro-Poetum palustris V.Golub et Saveljeva in V.Golub 1994 (Golub & Saveljeva 1988, 1991a, Golub 1994a)

N.t. of the association is the releve³ in Table 10 in the manuscript of Golub & Saveljeva (1988). The Ilovlya river valley, 4 km E v. Olkhovka, Olkhovskiye distr., Volgograd region, Russia, 3.VII.80, area analysed - 100 sq. m, total cover - 100%, *Juncus gerardii* Loisel.-1, *Agrostis stolonifera* L.-1, *Elytrigia repens* (L.) Nevski-2,

Cirsium esculentum (Siev.) C.A.Mey.-1, *Taraxacum officinale* Wigg.-1, *Alopecurus arundinaceus* Poir.-4, *Eleocharis palustris* (L.) Roem. et Schult.-2, *Poa palustris* L.-1, *Plantago maxima* Juss. ex Jacq.-1, *Lythrum virgatum* L.-1, *Carex melanostachya* Bieb. ex Willd.-1, *Achillea cartilaginea* Ledeb.-1, *Rhaponticum serratuloides* (Georgi) Bobr.-1, *Inula britannica* L.-1, *Fritillaria meleagroides* Patrin ex Schult. et Schult. fil.-1, *Beckmannia eruciformis* (L.) Host-2, *Rumex crispus* L.-1, *Sium latifolium* L.-1, *Calamagrostis epigeios* (L.) Roth-1, *Sonchus oleraceus* L.-1, *Alisma plantago-aquatica* L.-1, *Allium angulosum* L.-1, *Lycopus exaltatus* L. fil. 1, *Mentha arvensis* L.-1, *Ranunculus flammula* L.-1, *Rorippa brachycarpa* (C.A.Mey.) Hayek-1, *Stachys palustris* L.-1, *Veronica anagalloides* Guss.-1.

Alopecuro arundinacei-Eleocharitetum palustris V.Golub ass. nova (Mirkin et al. 1991, Golub 1994a)

N.t. of the association is the relevé 1 in Table 30 in the manuscript of Prokopiev (1990). The left bank of the Irtysh river, the central part of the flood-plain, near v. Pokrovka, Cherlakskiy distr., Omsk region, Russia, area analysed - 75 sq. m, *Agrostis stolonifera* L.-3, *Triglochin maritimum* L.-2, *Juncus gerardii* Loisel.-3, *Potentilla anserina* L.-2, *Elytrigia repens* (L.) Nevski-3, *Taraxacum officinale* Wigg.-2, *Alopecurus arundinaceus* Poir.-5, *Eleocharis palustris* (L.) Roem. et Schult.-2, *Plantago cornuti* Gouan-1, *Ranunculus repens* L.-1, *Poa angustifolia* L. -1, *Plantago major* L.-1, *Poa palustris* L.-2.

Junco-Glaucetum maritimae Mahn et Schub. 1962 em. Klotz et Köck 1984 (Klotz & Köck 1984)

Phragmito-Hordeetum brevisubulati V.Golub ass. nova (Mirkin et al. 1991, Golub 1994a)

N.t. of the association is the relevé 10 in Table 30 in the manuscript of Prokopiev (1990). The left bank of the Irtysh river, in the ancient terrace-adjacent part of flood-plain, near v. Kushayly, Sargatskiy distr., Omsk region, Russia, 31.VII.70., area analysed - 75 sq. m, *Juncus gerardii* Loisel.-4, *Agrostis stolonifera* L.-2, *Triglochin maritimum* L.-2, *Potentilla anserina* L.-1, *Scorzonera parviflora* Jacq.-1, *Elytrigia repens* (L.) Nevski-1, *Hordeum brevisubulatum* (Trin.) Link-4, *Phragmites australis* (Cav.) Trin. ex Steud.-1, *Carex diluta* Bieb.-1, *Plantago cornuti* Gouan-4, *Alopecurus arundinaceus* Poir.-1, *Primula longiscapa* Ledeb.-2.

Plantagini cornuti-Festucetum arundinaceae V.Golub et Saveljeva in V.Golub 1994 (Golub & Saveljeva 1988, 1991a, Golub 1994a)

Beckmannio-Puccinellenion bilykianae V.Golub 1994 (Golub 1994a). Meadows of small rivers of the Central-Chernozem region of Russia

D.s.: *Puccinellia bilykiana* Klok., *Beckmannia eruciformis* (L.) Host, *Polygonum junceum* Ledeb., *Matricaria perforata* Mérat, *Rorippa brachycarpa* (C.A.Mey.) Hayek

Junco gerardii-Beckmannietum eruciformis Agafonov et V.Golub in V.Golub 1994 (Agafonov & Golub 1990, Golub 1994a)

Puccinellio bilykianae-Bolboschoenetum maritimi Agafonov et V.Golub in V.Golub ass. nova (Agafonov & Golub 1990)

N.t. of the association is the relevé 8 in Table 4 in the manuscript of Agafonov & Golub (1990) in the terrace-adjacent part of the flood-plain of the Savala river valley, 2 km N v. Ljublinskiy, Bobrovskiy distr., Voronezh region, Russia, 8.VI.88, area analysed - 10 sq. m, total cover - 60%, *Agrostis stolonifera* L.-2, *Triglochin maritimum* L.-+, *Plantago salsa* Pall.-1, *Potentilla anserina* L.-+, *Eleocharis palustris* (L.) Roem. et Schult.-+, *Geranium collinum* Steph.-+, *Bolboschoenus maritimus* (L.) Palla.-+, *Scirpus tabernaemontani* C.C. Gmel.-+, *Trifolium repens*

L.-+, *Puccinellia bilykiana* Klok.-2, *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.-+, *Chenopodium glaucum* L.-1, *Atriplex patens* (Litv.) Iljin-2, *Bidens tripartita* L.-1, *Eleocharis uniglumis* (Link) Schult.-1, *Juncus atratus* Krock.-1, *Lotus ucrainicus* Klok.-+.

Peucedanion latifolii V.Golub 1994. Meadows of terraces of the Lower Don valley (Golub 1994a)

D.s.: *Peucedanum latifolium* (Bieb.) DC., *Cichorium intybus* L., *Lepidium latifolium* L., *Glycyrrhiza glabra* L.

Cichorio-Eringietum plani V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1989)

N.t. of the association is the relevé 640 in Table 5 in the book of Krasheninnikov et al. (1928)

Soncho-Daucetum carotae V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 31 in Table 45 in the book of Krasheninnikov et al. (1928)

Cirsio-Hordeion Mirk. in Karpov et al. ex V.Golub 1994. Mesophytic meadows on flood-plains of small rivers in Bashkortostan (Karpov et al. 1987, Golub & Solomakha 1988, Golub 1994a)

D.s.: *Hordeum brevisubulatum* (Trin.) Link, *Koeleria delavignei* Czern. ex Domin, *Peucedanum alsaticum* L., *Festuca pratensis* Huds., *Bromopsis inermis* (Leys.) Holub, *Trifolium pratense* L., *Sanguisorba officinalis* L.

****Cirsio esculenti-Festucetum pratensis*** Karpov et al. 1987 (Karpov et al. 1987)

****Elytriglo repentis-Alopecuretum arundinacei*** Karpov et al. 1987 (ibid.)

****Junco gerardii-Agrostietum stoloniferae*** Karpov et al. 1987 (ibid.)

****Hordeo brevisubulati-Festucetum pseudovinae*** Karpov et al. 1987 (ibid.)

Cirsio esculenti-Hordeetum brevisubulati Karpov et al. ex V.Golub 1994 (Golub 1994a)

****Cirsio esculenti-Festucetum valesiacaе*** Karpov et al. 1987 (Karpov et al. 1987)

****Taraxaco bessarabici-Festucetum pseudovinae*** Karpov et al. 1987 (ibid.)

****Hordeo brevisubulati-Agropyretum desertori*** Karpov et al. 1987 (ibid.)

Scorzonero-Juncetalia gerardii Vicherek 1973. Moist meadows on terraces of river valleys in the southern part of Ukraine (Golub & Solomakha 1988, Golub 1994a)

Scorzonero-Juncion gerardii (Wendbg. 1943) Vicherek 1973 (ibid.)

D.s. of ord., all.: *Plantago cornuti* Gouan, *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz., *Scorzonera parviflora* Jacq., *Tripolium vulgare* Nees, *Trifolium fragiferum* L.

Agrostietum stoloniferae Soo' 1957 em. V.Slkh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Juncetum gerardii Wenzl 1934 em. V.Slkh. et Shel. 1984 (ibid.)

****Festucetum regelianae*** V.Slkh. et Shel. 1984 (ibid.)

Halerpestetalia Mirk. et al. in V.Golub 1994. Meadows of Yakutia and Mongolia on low- and medium-salinized soils (Mirkin et al. 1980, 1984, 1986b, Kononov et al. 1986, Golub 1994a)

D.s.: *Hordeum brevisubulatum* (Trin.) Link, *Puccinellia tenuiflora* (Griseb.) Scribn. et Merr., *Halerpestes salsuginosa* (Pall. ex Georgi) Greene, *Agrostis divaricatissima* Mez

Puccinellion tenuiflorae Kononov in Kononov et al. 1986. Meadows of alases in Yakutia on salinized soils (Kononov et al. 1986, Gogoleva et al. 1987b)

D.s.: *Saussurea amara* (L.) DC., *Alopecurus arundinaceus* Poir., *Taraxacum ceratophorum* (Ledeb.) DC.

Puccinellietum tenuiflorae Mirk. et al. 1985 (Mirkin et al. 1985, Kononov et al. 1986, Gogoleva et al. 1987b)

Polygono sibiricae-Puccinellietum tenuiflorae Mirk. et al. 1985 (ibid.)

Artemisio santonicae-Limonietalia gmelinii V.Golub et V.Sikh. 1988. Mesoxerophytic communities in the southern part of Eastern Europe and Western Siberia on salinized soils with greatly variable regime of moisture (Golub & Solomakha 1988, Golub 1994a)

Artemisienalia santonicae V.Golub 1994 (Golub 1994a)

Artemision santonicae Shel. et V.Sikh. 1987 em. V.Golub 1994

(Shelyag-Sosonko & Solomakha 1987, Golub & Solomakha 1988, Golub 1994a)

D.s. of ord., subord., all.: *Artemisia santonica* L., *Limonium gmelinii* (Willd.) O.Kuntze, *L. meyeri* (Boiss.) O.Kuntze, *L. sareptanum* (A.Beck.) Gams, *L. tomentellum* (Boiss.) O.Kuntze, *L. caspium* (Willd.) Gams

Atriplici patentis-Puccinellietum bilykianae Agafonov et V.Golub in V.Golub ass. nova (Agafonov & Golub 1990)

N.t. of the association is the releve´1 in Table 8 in the manuscript of Agafonov & Golub (1990) 500 m NE v. Ljublinskiy, Bobrovskiy distr., Voronezh region, Russia, 28.VI.86, area analysed - 10 sq. m, total cover - 30%, *Juncus gerardii* Loisel.-2, *Triglochin maritimum* L.-2, *Salicornia prostrata* Pall.-1, *Suaeda prostrata* Pall.-1, *Puccinellia bilykiana* Klok.-1, *Atriplex patens* (Litv.) Iljin -1, *Atriplex nitens* Schkuhr-+, *Lepidium ruderae* L.-+.

****Puccinellio tenuissimae-Salicornietum europaeae*** Karpov et al. 1987 (Karpov et al. 1987)

Artemisio santonicae-Salicornietum prostratae V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1989)

N.t. of the association is the releve´700 in Table 55 in the book of Krasheninnikov et al. (1928)

Scorzonero parviflorae-Puccinellietum distantis (V.Sikh. et Shel. 1984) V.Golub 1994 (Solomakha & Shelyag-Sosonko 1984, Golub 1994a)

syn.: ****Puccinellietum distantis juncetosum gerardii*** V.Sikh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Camphorosmo-Puccinellietum distantis (V.Sikh. et Shel. 1984) Shel. et V.Sikh. 1987 (Solomakha & Shelyag-Sosonko 1984, Shelyag-Sosonko & Solomakha 1987)

syn.: ****Puccinellietum distantis typicum*** V.Sikh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

****Puccinellietum giganteae*** V.Sikh. et Shel. 1984 (Solomakha 1981, Solomakha & Shelyag-Sosonko 1984)

Salicornio-Puccinellietum giganteae Shel. et V.Sikh. 1987 (Solomakha & Shelyag-Sosonko 1984, Shelyag-Sosonko & Solomakha 1987)

syn.: ****Salicornio-Puccinellietum puccinellietosum giganteae*** V.Sikh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Puccinellio distantis-Triglochinietum maritimi V.Golub ass. nova (Mirkin et al. 1991)

N.t. of the association is the releve´5 in Table 32 in the manuscript of Prokopiev (1990). The left bank of the Irtysh river, in the terrace-adjacent part of the flood-plain, near v. Kharlamovo Tavricheskiy distr., Omsk region, 7.VI.74., area analysed - 75 sq. m, *Triglochin maritimum* L.-2, *Limonium gmelinii* (Willd.)

O.Kuntze-1, *Salicornia europaea* L.-5, *Tripolium pannonicum* (Jacq.) Dobrocz.-1, *Puccinellia distans* (Jacq.) Parl.-3, *Phragmites australis* (Cav.) Trin. ex Steud.-2.

Limonio meyeri-Artemisietum santonicae Shel. et V.Slkh. 1987 (Solomakha & Shelyag-Sosonko 1984, Shelyag-Sosonko & Solomakha 1987)

syn.: *Artemisietum santonicae* Soo¹ 1927 em. Shel. et V.Slkh. 1984 (Solomakha & Shelyag-Sosonko 1984)

Artemisio santonicae-Puccinellietum giganteae Shel. et V.Slkh. 1987 (Solomakha & Shelyag-Sosonko 1984, Shelyag-Sosonko & Solomakha 1987)

syn.: **Puccinellio-Artemisietum puccinellietosum giganteae* V.Slkh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

****Spergulario-Tripolietum*** Korzh. et Klukin 1990 (Korzhenevskiy & Klukin 1990b)

****Tripolietum vulgaris*** Korzh. et Klukin 1990 (Korzhenevskiy & Klukin 1990b)

Alhagion V.Golub et Tchorbadze 1988 in V.Golub 1994. Plant communities in desert zone of the Caspian Lowland (Golub & Tchorbadze 1988, Golub 1994a)

D.s.: *Suaeda salsa* (L.) Pall., *S. altissima* (L.) Pall., *Atriplex tatarica* L., *Phragmites australis* (Cav.) Trin. ex Steud., *Petrosimonia oppositifolia* (Pall.) Litv., *Lactuca tatarica* (L.) C.A.Mey.

Alhagienion V.Golub 1994. Plant communities of the Caspian Lowland with desert-like appearance (Golub 1994a)

D.s.: *Alhagi pseudalhagi* (Bieb.) Fisch., *Galium humifusum* Bieb., *Eremopyrum triticeum* (Gaertn.) Nevski

Elytrigio repentis-Cynodontetum V.Golub et Tchorbadze in V.Golub ass. nova (Golub & Tchorbadze 1988)

N.t. of the association is the relevé 5 in Table 10 in the manuscript of Golub & Tchorbadze (1988). The train of Baer mound, N aspect 6^o, v. Yar-Bazar, Lymanskiy distr., Astrakhan region, near ilmen Bolshoy Kara-Bulak, Russia, 5.08.85, area analysed - 10 sq. m, total cover - 45%, *Artemisia santonica* L.-4, *Limonium gmelinii* (Willd.) O.Kuntze -1, *Alhagi pseudalhagi* (Bieb.) Fisch.-1, *Galium humifusum* Bieb.-1, *Eremopyrum triticeum* (Gaertn.) Nevski-+, *Atriplex tatarica* L.-+, *Cynodon dactylon* (L.) Pers.-+, *Lactuca tatarica* (L.) C.A.Mey.-+, *Elytrigia repens* (L.) Nevski -+, *Phragmites australis* (Cav.) Trin. ex Steud.-+, *Medicago caerulea* Less. ex Ledeb.-+, *Consolida divaricata* (Ledeb.) Schroding.-+, *Convolvulus arvensis* L.-+, *Prangos odontalgica* (Pall.) Herrnst. et Heyn-1.

Alhagio-Artemisietum santonicae V.Golub et Tchorbadze in V.Golub 1994 (Golub & Tchorbadze 1988, Golub 1994a)

Tripolio-Phragmitenion V.Golub 1994. Plant communities of moist banks of water reservoirs in the Caspian Lowland (Golub 1994a)

D.s.: *Tripolium pannonicum* (Jacq.) Dobrocz., *Salicornia prostrata* Pall.

Plantagini-Puccinellietum giganteae V.Golub et Tchorbadze in V.Golub ass. nova (Golub & Tchorbadze 1988)

N.t. of the association is the relevé 4 in Table 14 in the manuscript of Golub & Tchorbadze (1988). The lower flat bank of ilmen Yaman-Arsok, 6 km W of v.Protochnoye Lymanskiy distr., Astrakhan region, Russia, 5.08.85. area analysed - 5 sq. m, total cover - 35%, *Juncus gerardii* Loisel.-3, *Salicornia prostrata* Pall.-1, *Suaeda salsa* (L.) Pall.-+, *Puccinellia gigantea* (Grossh.) Grossh. -2, *Tripolium pannonicum* (Jacq.) Dobrocz.-1, *Phragmites australis* (Cav.) Trin. ex Steud.-1, *Plantago major* L.-+, *Spergularia maritima* (All.) Chiov.-1, *Lotus tenuis* Waldst. et Kit. ex Willd.-+, *Atriplex rosea* L.-+, *Cynodon dactylon* (L.) Pers.-1, *Lactuca tatarica* (L.) C.A.Mey.-+, *Taraxacum officinale* Wigg.-+.

Suaedo-Phragmitetum V.Golub et Tchorbadze in V.Golub 1994 (Golub & Tchorbadze 1988, Golub 1994a, Golub & Kuzmina 1994)

Puccinellion fominii Shel. et V.Slkh. ex V.Golub 1994. Plant communities on banks of reservoir and drying lakes in Ukraine (Shelyag-Sosonko & Solomakha 1987, Golub 1994a)

D.s.: *Puccinellia fominii* Bilyk, *Frankenia hirsuta* L., *Halimione verrucifera* (Bieb.) Aell. *Petrosimonia oppositifolia* (Pall.) Litv.

Artemisio santonicae-Puccinellietum fominii Shel. et V.Slkh. 1987 (Solomakha & Shelyag-Sosonko 1984, Shelyag-Sosonko & Solomakha 1987)

syn.: **Puccinellio-Artemisietum santonicae puccinellietosum fominii* V.Slkh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Salicornio-Puccinellietum fominii Shel. et V.Slkh. 1987 (Shelyag-Sosonko & Solomakha 1987)

syn.: **Salicornio-Puccinellietum puccinellietosum fominii* V.Slkh. et Shel. 1984 (Solomakha & Shelyag-Sosonko 1984)

Puccinellietum syvaschicae Shel. et V.Slkh. 1987 (Shelyag-Sosonko & Solomakha 1987)

Puccinellietum fominii V.Slkh. et Shel. ex V.Golub 1994 (Solomakha & Shelyag-Sosonko 1984, Golub 1994a)

Elytrigienalia repentis V.Golub 1994. Mesoxerophytic communities of Eastern Europe and Western Siberia on "mild" salinized soils, primarily sulphate (Golub 1994a)

D.s.: *Elytrigia repens* (L.) Nevski

Limonion gmelinii V.Golub 1994. Communities of river valleys and limans in semi-desert zone, forest-steppe and steppe of Eastern Europe and Western Siberia on ecotopes with high unconfined ground water (Golub 1994a)

D.s.: *Limonium gmelinii* (Willd.) O.Kuntze, *Salicornia prostrata* Pall.

Puccinellio distantis-Artemisietum santonicae V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1989)

N.t. of the association is the relevé 300 in Table 43 in the book of Krasheninnikov et al. (1928)

Elytrigio-Artemisietum nitrosae V.Golub 1994 (Mirkin et al. 1991, Golub 1994a)

Salsolo sodae-Eleocharitetum klingeii Saveljeva et V.Golub 1991 (Saveljeva & Golub 1990, Golub & Saveljeva 1991b)

****Puccinellio distantis-Salicornietum europaeae*** Karpov et al. 1987 (Karpov et al. 1987)

Limonio tomentelli-Puccinellietum bilykianae V.Golub et Saveljeva in V.Golub ass. nova (Golub & Saveljeva 1988, 1991a)

N.t. of the association is the relevé 4 in Table 9 in the manuscript of Golub & Saveljeva (1988). The Ilovlya river valley, 4 km E v. Olkhovka, Olkhovskiy distr., Volgograd region, Russia, 3.VII.80, area analysed - 50 sq. m, total cover - 80%, *Juncus gerardii* Loisel.-1, *Plantago cornuti* Gouan-1, *Artemisia santonica* L.-4, *Limonium gmelinii* (Willd.) O.Kuntze-2, *Atriplex patens* (Litv.) Iljin-1, *Puccinellia bilykiana* Klok.-4, *Limonium tomentellum* (Boiss.) O.Kuntze-2, *Fritillaria meleagroides* Patrin ex Schult. et Schult. fil.-1, *Silaum silaus* (L.) Schinz et Thell.-1, *Eryngium planum* L.-1, *Elytrigia repens* (L.) Nevski-1, *Alisma plantago-aquatica* L.-1, *Bromopsis inermis* (Leys.) Holub-1, *Rhaponticum serratuloides* (Georgi) Bobr.-1.

Triglochino-Puccinellietum giganteae V.Golub et Saveljeva in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 7 in Table 8 in the manuscript of Golub & Saveljeva (1988). The Olkhovka river valley, 4 km E v. Kamenniy Brod, Olkhovskiy distr., Volgograd region, Russia, 1.VII.82, area analysed - 50 sq. m, total cover - 75%, *Juncus gerardii* Loisel.-1, *Triglochin maritimum* L.-1, *Scorzonera parviflora* Jacq.-1, *Plantago cornuti* Gouan.-1, *Tripolium pannonicum* (Jacq.) Dobrocz.-1, *Limonium gmelinii* (Willd.) O.Kuntze.-1, *Artemisia santonica* L.-2, *Atriplex patens* (Litv.) Iljin.-3, *Puccinellia gigantea* (Grossh.) Grossh.-3, *Eleocharis uniglumis* (Link) Schult.-1, *Phragmites australis* (Cav.) Trin. ex Steud.-1, *Rhaponticum serratuloides* (Georgi) Bobr.-1, *Geranium collinum* Steph.-1, *Salicornia prostrata* Pall.-1.

Limonion sareptani V.Golub 1994. Communities of limans in semi-desert zone along the Lower Volga valley (Golub 1994a)

D.s.: *Limonium sareptanum* (A.Beck.) Gams, *Eleocharis oxylepis* (Meinsh.) B.Fedtsch.

Limonio sareptani-Puccinellietum dolicholepidis Saveljeva et V.Golub 1991 (Saveljeva & Golub 1990, Golub & Saveljeva 1991b)

Eleocharitetum oxylepidis Saveljeva et V.Golub 1991 (ibid.)

Limonion tomentelli Agafonov et V.Golub in V.Golub 1994. Communities of depressions on watersheds of the Central-Chernozem region of Russia (Agafonov & Golub 1990, Golub 1994a)

D.s.: *Limonium tomentellum* (Boiss.) O.Kuntze, *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz., *Lepidium ruderae* L., *Cichorium intybus* L., *Poa bulbosa* L.

Artemisia santonicae-Puccinellietum bilykianae Agafonov et V.Golub in V.Golub ass. nova (Agafonov & Golub 1990)

N.t. of the association is the relevé 5 in Table 7 in the manuscript of Agafonov & Golub (1990). 2 km N railway station Talovaya, Talovskiy distr., Voronezh region, Russia, 25.VII.88, area analysed - 10 sq. m, total cover - 20%, *Plantago salsa* Pall.-1, *Artemisia santonica* L.-2, *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.-+, *Elytrigia repens* (L.) Nevski.-1, *Puccinellia bilykiana* Klok.-1, *Atriplex littoralis* L.-2, *Lepidium ruderae* L.-+, *Bassia sedoides* (Pall.) Aschers.-1, *Matricaria perforata* Mérat-+.

Limonio tomentelli-Festucetum valesiacae Agafonov et V.Golub in V.Golub 1994 (Agafonov & Golub 1990, Golub 1990)

Suaedetalia corniculatae V.Golub 1994. Plants communities on highly salinized soils of Yakutian alases and Mongolia river valleys (Golub 1994a)

N.t. of the order is the *Suaedion corniculatae-Puccinellion tenuiflorae* Mirk. in Mirkin et al. ex V.Golub 1994.

Suaedion corniculatae-Puccinellion tenuiflorae Mirk. in Mirkin et al. ex V.Golub 1994 (Mirkin et al. 1992, Golub 1994a)

D.s. of ord., all.: *Suaeda corniculata* (C.A.Mey.) Bunge, *Puccinellia tenuiflora* (Griseb.) Scribn. et Merr.

Suaedo corniculatae-Puccinellietum tenuiflorae Mirk. et al. 1985 (Mirkin et al. 1985, Gogoleva et al. 1987b)

Artemisia jacutica-Suaedetum corniculatae Burtseva in Mirkin et al. 1992

Glycyrrhizetea glabrae V.Golub et Mirk. in V.Golub cl. nova. Communities of mainly perennial herbaceous plants on meadows of the Lower Volga valley flooded for a short time or non-flooded during floodtimes but wetted by groundwaters for a long time on soils that as a rule are low- and medium-salinized (Golub 1983, 1986, Golub & Mirkin 1986, Golub & Solomakha 1988)

N.t. of the class is the *Glycyrrhizetalia glabrae* V.Golub et Mirk. in V.Golub ***Glycyrrhizetalia glabrae*** V.Golub et Mirk. in V.Golub ord. novus (ibid.)

N.t. of the order is the *Glycyrrhizion glabrae* V.Golub et Mirk. in V.Golub ***Glycyrrhizion glabrae*** V.Golub et Mirk. in V.Golub all. nova (ibid.)

D.s. of cl., ord., all.: *Glycyrrhiza glabra* L., *Acroptilon repens* (L.) DC., *Dodartia orientalis* L., *Calamagrostis epigeios* (L.) Roth, *Medicago caerulea* Less. ex Ledeb., *Eryngium planum* L., *Carex stenophylla* Wahlenb., *Bassia hyssopifolia* (Pall.) O.Kuntze

N.t. of the alliance is the *Cynancho-Artemisietum santonicae* V.Golub et Mirk. 1986 ***Cynancho-Artemisietum santonicae*** V.Golub et Mirk. 1986 (Golub & Mirkin 1986) syn.: *Artemisietum santonicae* V.Golub 1986 (Golub 1986)

Cichorio-Lactucetum serriolae V.Golub 1986 (Golub & 1986, Golub & Mirkin 1986)

Lepidio-Cynodontetum V.Golub 1986 (ibid.)

Limonio gmelinii-Artemision lerchianae Ageleuov et V.Golub in V.Golub all. nova. Communities of high sites of the Ural river flood-plain on low- and medium-salinized soils (Ageleuov & Golub 1989)

N.t. of the alliance is the *Glycyrrhizo glabrae-Leymetum ramosi* (Ageleuov et V.Golub) V.Golub ass. nova

Glycyrrhizo glabrae-Leymetum ramosi (Ageleuov et V.Golub) V.Golub ass. nova

syn.: **Artemisio lerchianae-Leymetum ramosi* Ageleuov et V.Golub non *Artemisio lerchianae-Leymetum ramosi* Karpov et Mirk. 1985 (Ageleuov & Golub 1989)

N.t. of the association is the releve´4 in Table 10 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Vladimirovka, Uralsk region, Kazakhstan, 11.VII.71, area analysed - 100 sq. m, total cover - 70%, *Glycyrrhiza glabra* L.-1, *Dodartia orientalis* L.-2, *Carex stenophylla* Wahlenb.-2, *Artemisia lerchiana* Web. ex Stechm.-1, *Limonium gmelinii* (Willd.) O.Kuntze-1, *Agropyron pectinatum* (Bieb.) Beauv.-1, *Leymus ramosus* (Trin.) Tzvel.-3, *Artemisia austriaca* Jacq.-1, *Potentilla bifurca* L.-1, *Elytrigia repens* (L.) Nevski-1, *Artemisia scoparia* Waldst. et Kit.-1, *Lythrum nanum* Kar. et Kir.-1, *Poa bulbosa* L.-2, *Polygonum patulum* Bieb. -1.

Agropyretum fragilis Ageleuov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve´2 in Table 11 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, near v. Sakharniy, Uralsk region, Kazakhstan, 2.VI.69, area analysed - 100 sq. m, total cover - 40%, *Acroptilon repens* (L.) DC.-2, *Dodartia orientalis* L.-1, *Glycyrrhiza glabra* L.-1, *Artemisia lerchiana* Web. ex Stechm.-1, *Limonium gmelinii* (Willd.) O.Kuntze-1, *Agropyron pectinatum* (Bieb.) Beauv.-1, *A. fragile* (Roth) P.Candargy -3, *Glycyrrhiza aspera* Pall.-1, *Rumex confertus* Willd.-1, *Bassia sedoides* (Pall.) Aschers.-1, *Gypsophila paniculata* L.-1, *Potentilla bifurca* L.-1, *Linaria macroura* (Bieb.) Bieb.-1, *Artemisia dracunculus* L.-1, *A. tschernieviana* Bess.-1, *Galium ruthenicum* Willd.-1, *Centaurea scabiosa* L.-1, *Linaria vulgaris* Mill.-1.

Elytrigio-Aeluropodion Ageleuov et V.Golub in V.Golub all. nova. Communities of mid-elevation sites of lower reaches of the Ural river flood-plain on medium-salinized soils (ibid.)

N.t. of the alliance is the *Elytrigio-Aeluropodetum* Ageleuov et V.Golub in V.Golub ass. nova

Elytrigio-Aeluropodetum Ageleuov et V.Golub in V.Golub ass. nova (ibid.).

N.t. of the association is the releve' 8 in Table 12 in the manuscript of Ageleuov & Golub (1989). The Ural river valley, between v. Zelenoye and v. Topoli, Gurievsk region, Kazakhstan, 1.VIII.69, area analysed - 100 sq. m, total cover - 40%, Glycyrrhiza glabra L.-3, Acroptilon repens (L.) DC.-3, Dodartia orientalis L.-1, Medicago caerulea Less. ex Ledeb.-1, Elytrigia repens (L.) Nevski-1, Aeluropus litoralis (Gouan) Parl.-1, Phragmites australis (Cav.) Trin. ex Steud.-2, Bassia sedoides (Pall.) Aschers.-1, Glycyrrhiza aspera Pall.-1, Agropyron fragile (Roth) P.Candargy-1, Juncus gerardii Loisel.-1, Convolvulus arvensis L.-1, Alhagi pseudalhagi (Bieb.) Fisch.-1, Ceratocarpus arenarius L.-1, Chenopodium rubrum L.-1, Lappula squarrosa (Retz.) Dumort.-1, Petrosimonia brachiata (Pall.) Bunge-1, Corispermum orientale Lam.-1, Salsola australis R.Br.-1, Argusia sibirica (L.) Dandy-1.

Festuco-Limonietea Karpov et Mirk. 1985. Steppe communities on solonetz soils in the steppe zone of Eastern Europe and Western Siberia (Karpov & Mirkin 1985, Golub & Solomakha 1988)

Festuco-Limonietalia Mirk. in V.Golub et V. Solomakha 1988 (Golub & Solomakha 1988)

Festuco-Limonion gmelinii Mirk. in V.Golub et V. Solomakha 1988 (ibid.)

D.s. of cl., ord., all.: Puccinellia tenuissima Litv. ex V.Krecz., Artemisia lerchiana Web. ex Stechm., Leymus ramosus (Trin.) Tzvel., Festuca valesiaca Gaudin, s.l. (incl. F. pseudovina Hack. ex Wiesb., F. pseudodalmatica Krajina), Artemisia austriaca Jacq., Limonium gmelinii (Willd.) O.Kuntze

Puccinellietum tenuissimae Karpov et Mirk. 1985 (Karpov & Mirkin 1985)

Limonio suffruticosi-Camphorosmetum monspeliacae Karpov et Mirk. 1985 (ibid.)

Limonio gmelinii-Caraganetum fruticosae Karpov et Mirk. 1985 (ibid.)

Limonio gmelinii-Puccinellietum tenuissimae Karpov et Mirk. 1985 (Karpov & Mirkin 1985, Karpov 1985)

Artemisio lerchianae-Leymetum ramosi Karpov et Mirk. 1985 (ibid.)

Plantagini salsae-Limonietum gmelinii Karpov 1985 (Karpov 1985)

****Limonio-Festucetum pseudodalmaticae*** V.Sikh. et Shel. 1984 (Solomakha 1981, Solomakha & Shelyag-Sosonko 1984, Solomakha & Shelyag-Sosonko 1987)

Festuco pseudovinae-Salicornietum europaeae Karpov et al. 1987 (Karpov et al. 1987)

****Limonietum tometelli*** Kisileva et al. 1994 (Kisileva et al. 1994)

Caricion stenophyllae Saveljeva et V.Golub 1991. Steppe communities on solonetz soils of Eastern Europe in semi-desert zone on liman slopes (Saveljeva & Golub 1990, Golub & Saveljeva 1991b)

D.s.: Carex stenophylla Wahlenb., Potentilla bifurca L., Elytrigia repens (L.) Nevski, Ornithogalum fischerianum Krasch.

Salvio tesquicolae-Koelerietum cristatae Saveljeva et V.Golub 1991 (ibid.)

Rorippo brachycarpae-Caricetum stenophyllae Saveljeva et V.Golub 1991 (ibid.)

****Artemision nitrosae*** Koroluk 1993. Communities of solonetz soils of the southern part of Western Siberia (Koroluk 1993)

D.s.: Festuca pseudovina Hack. ex Wiesb., Artemisia nitrosa Web. ex Stechm., A. rupestris L., Galatella biflora (L.) Nees, Koeleria cristata (L.) Pers.

****Artemisio nitrosae-Puccinellietum tenuissimae*** Koroluk 1993. (ibid.)

***Festuco pseudovinae-Artemisietum nitrosae** Koroluk 1993 (ibid.)

***Artemisio nitrosae-Leymetum paboani** Koroluk 1993 (ibid.)

All.?

Artemisio santonicae-Leymetum ramosi Saveljeva et V.Golub 1991 (Saveljeva & Golub 1990, Golub & Saveljeva 1991b)

***Psathyrostachyo-Limonietalia** Saitov in Mirkin et al. 1991. Steppe communities in the Middle Irtysh valley (Mirkin et al. 1991)

D.s. of ord., all.: *Artemisia schrenkiana* Ledeb., *Leymus angustus* (Trin.) Pilg., *Psathyrostachys juncea* (Fisch.) Nevski, *Saussurea salsa* (Pall.) Spreng., *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.

***Psathyrostacho-Limonion** Saitov in Mirkin et al. 1991 (ibid.)

D.s. of ord., all.: *Artemisia schrenkiana* Ledeb., *Leymus angustus* (Trin.) Pilg., *Psathyrostachys juncea* (Fisch.) Nevski, *Sassurea salsa* (Pall.) Spreng., *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.

***Psathyrostachyo junceae-Puccinellietum tenuissimae** Saitov in Mirkin et al. 1991 (ibid.)

***Carici stenophyllae-Achnateretum splendentis** Saitov in Mirkin et al. 1991 (ibid.)

***Cenolophio denudati-Plantaginetum salinae** Saitov in Mirkin et al. 1991 (ibid.)

Festuco-Puccinellietea Soó 1968. Mesoxerophytic communities of Southern Europe on salinized soils. To a great extent this class is synonym of the cl. *Asteretea tripolium* and cl. *Festuco-Limonietea* (Korzhenevskiy & Klukin 1990a, Korzhenevskiy & Klukin 1991)

D.s.: *Artemisia santonica* L., *Hordeum geniculatum* All., *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.

Artemisio-Festucetalia pseudovinae Soó 1968. Steppes communities on salinized soil in the Ponticus-Pannonicus area (ibid.)

Festucion pseudovinae Soó 1963 em. Vicherek 1973 (ibid.)

D.s. of ord., all.: *Limonium meyeri* (Boiss.) O.Kuntze, *Ranunculus pedatus* Waldst. et Kit., *Trifolium retusum* L.

Artemisio tauricae-Valerianetum tuberosae Korzh. et Klukin 1991 (ibid.)

Camphorosmo-Agropyron desertori Korzh. et Klukin 1991. Mesoxerophytic communities on salinized soils of Crimea (ibid.)

D.s.: *Camphorosma monspeliaca* L., *Salsola soda* L., *Agropyron desertorum* (Fisch. ex Link) Schult.

Thero-Eremopyretum Korzh. et Klukin 1991 (ibid.)

Melliloti neapolitani-Elytrigletum repentis Korzh. et Klukin 1991 (ibid.)

***Atraphaco-Capparidion** Korzh. 1992. Communities of Crimean seaside badlands (Korzhenevskiy 1992)

Atraphaco-Capparidetum Korzh. et Klukin 1988 (Korzhenevskiy & et Klukin 1988, 1989)

Festuco-Brometea Br.-Bl. et R.Tx. 1943. Communities of xerothermic herbaceous plants of the Euro-Asia (Saitov & Mirkin 1991)

D.s.: *Filipendula vulgaris* Moench, *Poa angustifolia* L., *Galium verum* L., *Festuca valesiaca* Gaudin, *Medicago falcata* L., *M. romanica* Prod., *Phleum phleoides* (L.), Karst., *Artemisia austriaca* Jacq., *Euphorbia seguierana* Neck., *Asperula cynanchica* L., *Centaurea scabiosa* L.

Ord.?

Limonio tomentelli-Artemision santonicae Agafonov et V.Golub in V.Golub ass. nova. Communities on solonetz soils in Voronezh region (Agafonov & Golub 1990)
N.t. of the alliance is the *Limonio tomentelli-Artemisietum santonicae* Agafonov et V.Golub in V.Golub ass. nova

D.s.: *Limonium tomentellum* (Boiss.) O.Kuntze, *Artemisia santonica* L., *Lepidium ruderae* L., *Psammophiliella muralis* (L.) Ikonn., *Elytrigia repens* (L.) Nevski, *Allium paniculatum* L., *Potentilla argentea* L., *Achillea nobilis* L.

Limonio tomentelli-Artemisietum santonicae Agafonov et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 5 in Table 9 in the manuscript of Agafonov & Golub. 1 km N v. Kriusha, Paninskiy distr., Voronezh region, Russia, 27.VII.86, area analysed - 10 sq. m, total cover - 60%, *Festuca valesiaca* Gaudin-3, *Poa bulbosa* L.-1, *P. compressa* L.-+, *Crinitaria linosyris* (L.) Less.-+, *Koeleria cristata* (L.) Pers.-1, *Veronica spicata* L.-1, *Artemisia santonica* L.-2, *Limonium tomentellum* (Boiss.) O.Kuntze-1, *Lepidium ruderae* L.-1, *Psammophiliella muralis* (L.) Ikonn.-1, *Allium paniculatum* L.-+, *Potentilla argentea* L.-1, *Achillea millefolium* L.-1, *Peucedanum ruthenicum* Bieb.-1, *Artemisia pontica* L.-1, *Bromus japonicus* Thunb.-+, *Galium verum* L.-+, *Melilotus officinalis* (L.) Pall.-1.

Crithmo-Staticetea Br.-Bl. 1947. Plant communities of limestone rocks and walls influenced by salt splashes of sea-water (Korzhenevskiy 1987, Golub & Solomakha 1988)

Crithmo-Staticetalia Mol. 1947 (ibid.)

****Kochio-Limonion*** Korzh. 1987. Communities of limestone rocks affected by splashes of sea-water in Crimea (ibid.)

D.s.: *Elytrigia bessarabica* (Savul. et Rayss) Prokud., *Kochia prostrata* (L.) Schrad., *Holosteum umbellatum* L., *Crinitaria linosyris* (L.) Less.

****Puccinellio distantis-Limonietum meyeri*** Korzh. 1987 (Korzhenevskiy & Klukin 1986, Korzhenevskiy 1987)

****Lactuco tataricae-Elytrigion bessarabicae*** Korzh. et Klukin 1990. Communities of limestone beaches affected by splashes of sea-water in Crimea (Korzhenevskiy & Klukin 1990b)

D.s.: *Lactuca tatarica* (L.) C.A.Mey., *Elytrigia bessarabica* (Savul. et Rayss) Prokud.

****Crithmo-Elytrigietum bessarabicae*** Korzh. et Klukin 1990 (ibid.)

****Lactuco tataricae-Elytrigietum bessarabicae*** Korzh. et Klukin 1990 (ibid.)

Artemisietea lerchianae V.Golub 1994. Zonal desert communities of the Caspian Lowland on loamy-sandy and loamy soils (Golub & Savtschenko 1986, Golub 1987, Golub 1994b)

N.t. of the class is the *Artemisietalia lerchianae* V.Golub 1994

Artemisietalia lerchianae V.Golub 1994 (ibid.)

N.t. of the order is the *Artemision lerchianae* V.Golub 1994

Artemision lerchianae V.Golub 1994 (ibid.).

D.s. of cl., ord., all.: *Artemisia lerchiana* Web. ex Stechm., *Camphorosma monspeliaca* L., *Eremopyrum orientale* (L.) Jaub. et Spach

Kochietum prostratae V.Golub 1994 (ibid.)

Salsoletum dendroidis V.Golub 1994 (ibid.)

Anabasietaum aphyllae V.Golub 1994 (ibid.)

Artemisietea tschernievianae V.Golub 1994. Desert plant communities of the Caspian Lowland on sandy weakly developed and undeveloped soils (Golub & Sinyakina 1992, Golub 1994b)

N.t. of the class is the *Artemisietalia tschernievianae* V.Golub 1994.

Artemisietalia tschernievianae V.Golub 1994. Communities on fixed and swarded sands (Golub & Savtschenko 1986, Golub 1987, Golub & Sinyakina 1992, Golub, 1994b)

N.t. of the order is the *Euphorbion seguieranae* V.Golub 1994

D.s. of cl., ord.: *Leymus racemosus* (Lam.) Tzvel., *Artemisia tschernieviana* Bess. s.l. (incl. *A. arenaria* DC.), *Anisantha tectorum* (L.) Nevski

Euphorbion seguieranae V.Golub 1994. Communities of overgrown fixed sands (Golub 1994b).

D.s.: *Euphorbia seguierana* Neck., *Poa bulbosa* L., *Helichrysum arenarium* (L.) Moench, *Alyssum turkestanicum* Regel et Schmalh., *Agropyron fragile* (Roth) P.Candargy

Artemisietum tschernievianae V.Golub 1994 (Golub & Savtschenko 1986, Golub 1987, Golub & Sinyakina 1992, Golub, 1994b)

Koelerietum sabuletorii V.Golub 1994 (Golub & Sinyakina 1992, Golub, 1994b)

Tamariceto-Salsolion australis V.Golub 1994

syn.: **Salsolion australis* V.Golub et Savtschenko 1986. Communities of the Caspian Lowland on wind-affected barchans or raised sands (Golub & Savtschenko 1986, Golub 1987, Golub & Sinyakina 1992, Golub 1994b)

D.s.: *Salsola australis* R.Br.

Tamariceto-Salsoletum australis V.Golub 1994

syn.: **Salsoletum australis* V.Golub et Savtschenko 1986 non *Salsoletum ruthenicae* Philippi 1971 (ibid.)

Salsolo australis-Atriplicetum tataricae V.Golub 1994 (Golub & Sinyakina 1992, Golub 1994b)

Salsolo australis-Cannabletum ruderalis V.Golub 1994 (ibid.)

Cl.?

Ord.?

All.?

Polygono-Kalidietum caspici Schubenkina et V.Golub in V.Golub ass. nova (Schubenkina & Golub 1992)

N.t. of the association is the relevé 5 in Table 2 in the manuscript of Schubenkina et Golub (1992). 3 km S the chink (escarpment) Burchliburun, Tashauz region, Turkmenistan, 1.VI.90, area analysed - 400 sq. m, total cover - 10%, *Kalidium caspicum* (L.) Ung.-Sternb.-2, *Polygonum acetosum* Bieb.-+, *Climacoptera lanata* (Pall.) Botsch.-+, *Halimocnemis villosa* Kar. et Kir.-+, *Salsola orientalis* S.G.Gmel.-1, *Lepyrodiclis stellarioides* Schrenk.-+, *Haloxylon aphyllum* (Minkw.) Iljin-r, *Girgenshonia oppositiflora* (Pall.) Fenzl-r, *Sphenopus divaricatus* (Gouan) Reichenb.-r.

Astragaletum commixti Schubenkina et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 3 in Table 3 in the manuscript of Schubenkina & Golub (1992). 3,5 km S the chink Burchliburun, slope, S aspect, 10°, Tashauz region, Turkmenistan, 17.V.90, area analysed - 400 sq. m, total cover - 50%, *Astragalus commixtus* Bunge-r, *Heterocaryum szovitsianum* (Fisch. et Mey.)

A.DC.-r, Koelpinia linearis Pall.-r, Nonea caspica (Willd.) G.Don fil.-r, Amberboa turanica Iljin-2, Arnebia decumbens (Vent.) Coss. et Kral.-+, Erodium litwinowii Woronow-+, Leptaleum filifolium (Willd.) DC.-+, Salsola orientalis S.G.Gmel.-3, Eremopyrum distans (C.Koch) Nevski-+, Tetracme quadricornis (Steph.) Bunge-r, Ceratocephala falcata (L.) Pers.-+, Heteroderis pusilla (Boiss.) Boiss.-r, Acantholepis orientalis Less.-r.

Anabasletum salsae Schubenkina et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve'5 in Table 4 in the manuscript of Schubenkina et Golub (1992). 8 km SW the chink Burchliburun, Tashauz region, Turkmenistan, 2.VI.90, area analysed - 400 sq. m, total cover - 35%, Anabasis salsa (C.A.Mey) Benth. ex Volkens-2, Pannaria pezizoides (Web.) Trev.-2, Erodium litwinowii Woronow-r, Amberboa turanica Iljin-1, Arnebia decumbens (Vent.) Coss. et Kral.-+, Leptaleum filifolium (Willd.) DC.-+, Carex physodes Bieb.-2, Eremopyrum distans (C.Koch) Nevski-+, Haloxylon aphyllum (Minkw.) Iljin-r, Strigosella scorpioides (Bunge) Botsch.-+, Tulipa sogdiana Bunge-r, Plantago lagocephala Bunge-r, Koelpinia linearis Pall.-r.

Anabasletum eriopodae Schubenkina et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve'1 in Table 5 in the manuscript of Schubenkina et Golub (1992). 6 km SSW the chink Burchliburun, Tashauz region, Turkmenistan, 20.V.90, area analysed - 400 sq. m, total cover - 25%, Anabasis eriopoda (Schrenk) Benth. ex Volkens-+, Anabasis salsa (C.A.Mey.) Benth. ex Volkens-r, Pannaria pezizoides (Web.) Trevis.-1, Lepyroclis stellarioides Schrenk-r, Haloxylon aphyllum (Minkw.) Iljin-r, Caloplaca tominii Sav.-1, Climacoptera lanata (Pall.) Botsch.-r.

Salsolion chiwensis V.Golub all. nova. Plant communities of depressions in Northern Turkmenistan on soils with high-level gypsum accumulation (ibid.)

D.s.: Salsola chiwensis M.Pop., S. arbuscula Pall., Zygophyllum ovigerum Fisch. et Mey. ex Bunge, Calligonum leucocladum (Schrenk) Bunge, Atraphaxis spinosa L., Toninia coeruleonigricans (Lightf.) Th.Fr., Haplophyllum obtusifolium (Ledeb.) Ledeb., Tortula desertorum Broth., Anabasis brachiata Fisch. et Mey. ex Kar. et Kir.

N.t. of the alliance is the *Salsoletum chiwensis* Schubenkina ex V.Golub ass. nova

Salsoletum chiwensis Schubenkina ex V.Golub ass. nova (ibid.)

N.t. of the association is the releve'3 in Table 6 in the manuscript of Schubenkina et Golub (1992). 12 km SW the chink Burchliburun, the dry lake Akhmeddag, Tashauz region, Turkmenistan, 22.IV.90, area analysed - 250 sq. m, total cover - 20%, Salsola chiwensis M.Pop.-+, Zygophyllum ovigerum Fisch. et Mey. ex Bunge-+, Toninia coeruleonigricans (Lightf.) Th.Fr.-3, Calligonum leucocladum (Schrenk) Bunge-r, Salsola arbuscula Pall.-r, Tortula desertorum Broth.-3, Anabasis brachiata Fisch. et Mey. ex Kar. et Kir.-+, Atraphaxis spinosa L.-+, Haloxylon aphyllum (Minkw.) Iljin-+, Gypsophila diffusa Fisch. et Mey. ex Rupr.-1, Carex physodes Bieb.-+, Calligonum junceum (Fisch. et Mey.) Litv.-+, Lycium ruthenicum Murr.-r, Nonea caspica (Willd.) G.Don fil.-r.

Hellotropietum dasycarpi Schubenkina ex V.Golub ass. nova (ibid.)

N.t. of the association is the releve'1 in Table 7 in the manuscript of Schubenkina et Golub (1992). 15 km SW the chink Burchliburun, dry lake Akhmeddag, Tashauz region, Turkmenistan, 22.IV.90, area analysed - 250 sq. m, total cover - 20%, Salsola chiwensis M.Pop.-1, Zygophyllum ovigerum Fisch. et Mey. ex Bunge-1, Atraphaxis spinosa L.-r, Calligonum leucocladum (Schrenk) Bunge-r, Salsola arbuscula Pall.-+, Haplophyllum obtusifolium (Ledeb.) Ledeb.-+, Toninia

coeruleonigricans (Lightf.) Th.Fr.-3, Anabasis brachiata Fisch. et Mey. ex Kar. et Kir.-r, Tortula desertorum Broth.-3, Heliotropium dasycarpum Ledeb.-1, Astragalus transcasicus Freyn-+, Euphorbia sclerocyathium Korov. et M.Pop.-r, Stipa arabica Trin. et Rupr.-r, Haloxylon aphyllum (Minkw.) Iljin-+, Salsola orientalis S.G.Gmel.-+, Carex physodes Bieb.-+, Alhagi pseudalhagi (Bieb.) Fisch.-r, Calligonum junceum (Fisch. et Mey.) Litv.-+, Erodium oxyrhynchum Bieb.-r, Nonea caspica (Willd.) G.Don fil.-r.

Cl.?

Ord.?

All.?

Haloxylon-Suaedetum arcuatae Tschernova et V.Golub in V.Golub ass. nova (Tschernova & Golub 1992)

N.t. of the association is the relevé 3 in Table 3 in the manuscript of Tschernova et Golub (1992). The bay Kulaniy of the Sarakamysh lake, sandy shore, Tashauz region, Turkmenistan, 14.VI.90, area analysed - 1000 sq. m, total cover - 70%, Suaeda arcuata Bunge-5, Haloxylon aphyllum (Minkw.) Iljin-1.

Eremopyro-Kochletum iranicae Tschernova et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 2 in Table 4 in the manuscript of Tschernova et Golub (1992). The bay Kulaniy of the Sarakamysh lake, loamy shore, Tashauz region, Turkmenistan, 29.V.90, area analysed - 100 sq. m, total cover - 3%, Kochia iranica Bornm.-+, Eremopyrum distans (C.Koch) Nevski-+, Haloxylon aphyllum (Minkw.) Iljin-+, Climacoptera lanata (Pall.) Botsch.-+, Ceratocephala falcata (L.) Pers.-+, Girgenshonia oppositiflora (Pall.) Fenzl-+, Leptaleum filifolium (Willd.) DC.-+, Kalidium caspicum (L.) Ung.-Sternb.-+, Strigosella sp.-+.

Acarosporo-Salsoletum richteri Tschernova et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 2 in Table 5 in the manuscript of Tschernova et Golub (1992). The island Kapylarkyr in the Sarakamysh lake, Tashauz region, Turkmenistan, 31.V.90, area analysed - 200 sq. m, total cover - 20%, Salsola richteri (Moq.) Kar. ex Litv.-+, Acarospora glaucocarpa (Wahlb.) Koerb.-+, Endopyrenium desertorum (Tomin) Oxn.-+, Tortula desertorum Broth.-1, Roemeria hybrida (L.) DC.-+, Haloxylon aphyllum (Minkw.) Iljin-1, Eremopyrum distans (C.Koch) Nevski-2, Caloplaca auricantia Hellb.-+, Nonea melanocarpa Boiss.-+, Ceratocephala falcata (L.) Pers.-+, Kochia odontoptera Schrenk-+, Arnebia transcaspica M.Pop.-+, Tetracme recurvata Bunge-+, Aspicilia esculenta (Pall.) Flag.-+, Caloplaca sp. -+, Cistanche ambigua (Bunge) G.Beck-1, Salsola orientalis S.G.Gmel.-1, Strigosella scorpioides (Bunge) Botsch.-+, Zosima orientalis Hoffm.-1.

Carlci physodis-Stipagrostietum pennatae Tschernova et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the relevé 6 in Table 6 in the manuscript of Tschernova et Golub (1992). The Southern archipelago in Sarakamysh lake, the top of sandy ridge, Tashauz region, Turkmenistan, 7.V.90, area analysed - 100 sq. m, total cover - 15%, Stipagrostis pennata (Trin.) de Winter-+, Hypecoum parviflorum Kar. et Kir.-1, Schismus arabicus Nees-+, Erodium oxyrhynchum Bieb.-+, Silene nana Kar. et Kir.-+, Horaninovia anomala (C.A.Mey.) Moq.-+, Amberboa turanica Iljin-+,

Arnebia transcaspica M.Pop.-1, *Carex physodes* Bieb.-1, *Epilasia hemilasia* (Bunge) Clarke-+, *Astragalus commixtus* Bunge-+, *Ceratocephala falcata* (L.) Pers.-1, *Eremopyrum distans* (C.Koch) Nevski-+, *Roemeria hybrida* (L.) DC.-+, *Koelpinia linearis* Pall.-+, *Lagoseris sancta* (L.) K.Maly-+, *Microcephala lamellata* (Bunge) Pobed.-1, *Salsola richteri* (Moq.) Kar. ex Litv.-+, *Lappula semiglabra* (Ledeb.) Guerke-+, *Tortula desertorum* Broth.-1, *Haloxylon aphyllum* (Minkw.) Iljin-1, *Calligonum leucocladum* (Schrenk) Bunge-1, *Kochia odontoptera* Schrenk-+, *Nonea melanocarpa* Boiss.-+, *Cousinia dichotoma* Bunge-+, *Acantholepis orientalis* Less.-+, *Mausolea eriocarpa* (Bunge) Poljak.-+, *Acarospora glaucocarpa* (Wahlb.) Koerb.-+, *Endopyrenium desertorum* (Tomin) Oxn.-+, *Ferula karelinii* Bunge-+, *Caloplaca auricantia* Hellb.-+, *Strigosella scorpioides* (Bunge) Botsch.-+.

Malacocarpodion crithmifolii V.Golub all. nova. Plant communities of karst funnels, cracks and gulches frequently crumbled in the northern Turkmenistan (ibid.)

D.s.: *Malacocarpus crithmifolius* (Retz.) C.A.Mey., *Scorzonera pusilla* Pall., *Diptychocarpus strictus* (Fisch. ex Bieb.) Trautv., *Zosima orientalis* Hoffm.

N.t. of the alliance is the *Artemisio kemrudicae-Malacocarpodetum crithmifolii* Tschernova et V.Golub in V.Golub ass. nova.

Artemisio kemrudicae-Malacocarpodetum crithmifolii Tschernova et Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve' 5 in Table 7 in the manuscript of Tschernova et Golub (1992). The Eastern Chink of plateau Ustjurt, Karakalpakstan, 19.V.89, area analysed - 10 sq. m, total cover - 12%, *Artemisia kemrudica* Krasch.-+, *Gypsophila diffusa* Fisch. et Mey. ex Rupr.-+, *Atraphaxis spinosa* L.-+, *Salsola arbuscula* Pall.-+, *Malacocarpus crithmifolius* (Retz.) C.A.Mey.-+, *Diptychocarpus strictus* (Fisch. ex Bieb.) Trautv.-+, *Zosima orientalis* Hoffm.-+, *Eremopyrum distans* (C.Koch) Nevski-+, *Lycium ruthenicum* Murr.-+, *Lachnoloma lehmannii* Bunge-+, *Allium sabulosum* Stev. ex Bunge-+, *Poa bulbosa* L.-+.

Roemerietum hybridae Tschernova et V.Golub in V.Golub ass. nova (ibid.)

N.t. of the association is the releve' 1 in Table 8 in the manuscript of Tschernova et Golub (1992). 7 km SW the descent Kurgankyr, Southern Ustjurt, karst funnel, Karakalpakstan, 26.IV.89, area analysed - 50 sq. m, total cover - 14%, *Roemeria hybrida* (L.) DC.-+, *Ceratocephala falcata* (L.) Pers. -+, *Hypocoum parviflorum* Kar. et Kir.-+, *Veronica campylopoda* Boiss.-+, *Malacocarpus crithmifolius* (Retz.) C.A.Mey.-2, *Scorzonera pusilla* Pall.-+, *Zosima orientalis* Hoffm.-+, *Eremopyrum distans* (C.Koch) Nevski-+, *Haloxylon aphyllum* (Minkw.) Iljin-+, *Asparagus* sp. L.-+, *Amberboa turanica* Iljin-+, *Climacoptera* sp. Botsch.-+, *Gypsophila diffusa* Fisch. et Mey. ex Rupr.-+.

Community Malacocarpus crithmifolius Tschernova et V.Golub 1992 (ibid.)

References

Agafonov, V.A. & Golub, V.B. (1990): Syntaxonomic characteristic of vegetation communities of saline soils in the Oka-Don plain. - Manuscript; subm. in VINITI 10.04.90, N 1976-B90, 38 pp. Moscow. (In Russian)

Ageleuov, E.A. & Golub, V.B. (1989): Floristic classification of meadows of the Ural river. - Manuscript; subm. in VINITI 23.06.89., N 4148-B89, 46 pp. Moscow. (In Russian)

- Balevičienė, J. (1991): Syntaxonomic and phytogeographical vegetation structure in Lithuania. - Vilnius, 219 pp. (In Russian with English summary)
- Barkman, J.J., Moravec, J. & Rauschert, S. (1986): Code of Phytosociological Nomenclature. - Vegetatio, 67:145-195.
- Berdiev, B. & Golub, V.B. (1992): Communities of the ord. *Halostachyetalia* Topa 1939 (the cl. *Salicornietea fruticosae*) in south-western Turkmenistan.- Manuscript; subm. in VINITI 10.09.1992. N 2756-B92, 40 pp. (In Russian)
- Gogoleva, P.A. et al. (1987a): Syntaxonomy of ruderal vegetation of the town Yakutsk. - Manuscript; subm. in VINITI 07.09.1987. N 6560-B87, 40 pp. (In Russian)
- Gogoleva, P.A. et al. (1987b): Syntaxonomy and symphytosociology of alases vegetation in Central Yacutia. - Irkutsk, 176 pp. (In Russian)
- Golub, V.B. (1983): A practice of floristic classification of grassy associations in the Volga-Akhtuba rivers bottomland and in the Volga river delta.- Bull. MOIP, sect. biol. 88(2): 83-94. (In Russian with English summary)
- Golub, V.B. (1985): On characteristic of the association *Alismato-Salicornietum* of the Volga delta.- Anthropogenous vegetation processes. Ufa: 36-47. (In Russian)
- Golub, V.B. (1986): Communities of the *Glycyrrhizetea glabrae* on the Lower Volga. - Classification of the USSR vegetation with the use of floristic criteria; B.M. Mirkin (ed.) Moscow Univ. publ.: 159-172. (In Russian)
- Golub, V.B. (1987): On syntaxonomic characteristic of the desert pasture communities of the Volga delta.- Manuscript; subm. in VINITI 30.07.1987. N 5424-B87, 34 pp. (In Russian)
- Golub, V.B. (1994a): Class *Asteretea tripolium* on the territory of the former USSR and Mongolia.- Folia geobot. et phytotax. Praha, 29 (1): 15-54.
- Golub, V.B. (1994b): The desert vegetation communities of the Lower Volga valley.- Feddes Repertorium, 7-8: 499-515.
- Golub, V.B. & Čorbadze, N.B. (1989): The communities of the order *Halostachyetalia* Topa 1939 in the area of Western Substeppe Ilmens of the Volga delta.- Folia geobot. et phytotax. Praha, 24 (2): 113-130.
- Golub, V.B. & Kuzmina E.V. (1994): Characteristic of the ruderal vegetation of the Lower Volga valley.- Manuscript; subm. in VINITI 03.11.1993. N 2753-B93, 64 pp. (In Russian)
- Golub, V.B. & Losev, G.A. (1990a): The aquatic and hydrophytic vegetation of the Lower Volga valley. I. General description. Cl. *Charetea* (Fucarek 1961 n.n.) Krausch 1964, *Lemnetea* R.Tx. 1955, *Ruppietea* J.Tx. 1960. Manuscript; subm. in VINITI 10.04.90. N 1973-B90, 51 pp. (In Russian)
- Golub, V.B. & Losev, G.A. (1990b): The aquatic and hydrophytic vegetation of Lower Volga valley. III. Cl. *Phragmitetea* R.Tx. et Preising 1942, cl. *Bolboschoenetetea maritimi* Vicherek et R.Tx. et Hülb. 1971. Manuscript; subm. in VINITI 10.04.90, N 1975-B90, 58 pp. (In Russian)
- Golub, V.B. & Losev, G.A. (1991): The aquatic and hydrophytic vegetation of the Volga-Akhtuba rivers bottomland and the Volga river delta in the Braun-Blanquet approach classification. - Bot. Z., 76(5): 720-727. (In Russian with English summary)
- Golub, V.B., Losev, G.A. & Mirkin, B.M. (1991): The aquatic and hydrophytic vegetation of the Lower Volga valley. - Phytocoenologia, 20 (1): 1-63.
- Golub, V.B. & Mirkin, B.M. (1986): Grasslands of the Lower Volga valley. - Folia geobot. et phytotax. Praha, 21 (4): 337-395.

- Golub, V.B. & Saveljeva, L.F. (1988): Herbaceous communities of the flood-plains of the Don river basin within Volgograd region. - Manuscript; subm. in VINITI 18.02.1988, N 1310-B88, 45 pp. Moscow. (In Russian)
- Golub, V.B. & Saveljeva, L.F. (1989): Floristic classification of meadows of the Lower Don valley (on materials of I.M. Krashenninnikov's expeditions) - Manuscript; VINITI 7.08.89, N 5353-B90, 39 pp. Moscow. (In Russian)
- Golub, V.B. & Saveljeva, L.F. (1991a): On characteristic of the herbaceous vegetation of flood-plains of small and middle rivers valleys of Volgograd region. - Biol. nauki, 8: 130-134. (In Russian with English summary)
- Golub, V.B. & Saveljeva, L.F. (1991b): Vegetation of the Lower Volga limans (basins without outflow) - Folia geobot. et phytotax. Praha, 26 (4): 403-430.
- Golub, V.B. & Savtschenko, I.V. (1986): The floristic classification of the desert pasture communities of the Volga delta. - Syntaxonomy and dynamics of anthropogenous vegetation; B.M. Mirkin (ed.) Bashkirian Univ. publ.: 17-26. (In Russian)
- Golub, V.B. & Sinyakina, V.V. (1992): Psammophilous vegetation communities of the Lower Volga valley. - Manuscript; subm. in VINITI 25.01.92, N 249-B92, 18 pp. (In Russian)
- Golub, V.B. & Solomakha, V.A. (1988): The highest units of the classification of the salt soil vegetation in the European part of the USSR - Bull. MOIP, sect. biol., 93(6): 80-92. (In Russian with English summary)
- Golub, V.B. & Tchorbadze, N.B. (1987): The communities of the order *Halostachyetalia* Topa 1939 in the area of Western Substeppe Ilmens of the Volga delta. - Manuscript; subm. in VINITI 30.07.87, N 5433-B87, 34 pp. (In Russian)
- Golub, V.B. & Tchorbadze, N.B. (1988): On syntaxonomic characteristic of the plant communities of Western Substeppe Ilmens of the Volga delta. - Manuscript; subm. in VINITI 08.09.88, N 6909-B88, 57 pp. Moscow. (In Russian)
- Denisova, A.V. & Mirkin, B.M. (1992): *Molinio-Arrhenatheretea* class meadows beyond the Urals.- Bull. MOIP, sect. biol., 97(3): 100-108. (In Russian with English summary)
- Karpov, D.N. (1985): Associations of solonetz steppe of Bashkiria in front of the Urals. - Phytocoenology of anthropogenous vegetation. Ufa: 124-136. (In Russian)
- Karpov, D.N. & Mirkin, B.M. (1985): A new vegetation class of pasture on solonchaks-*Festuco-Limonietea* cl. nova. - Anthropogenous vegetation processes. Ufa: 6-20. (In Russian)
- Karpov, D.N., Mirkin, B.M. & Onischenko, L.M. (1987): Syntaxonomy of solonchak meadows in the Bashkiria rivers' floodplains. The classes *Festuco-Puccinellietea* Soo 1968 and *Thero-Salicornietea strictae* Br.-Bl. et R.Tx. 43 em. R.Tx. 55. - Manuscript; subm. in VINITI 07.09.87, N 6556-B87, 44 pp. Moscow. (In Russian)
- Kisileva, L.L., Radygina, V.I., Prigorjanu, O.M. (1994): Some associations of ecotones of central forest-steppe (of classes *Trifolio-Geranietea*, *Querco-Fagetea* and *Festuco-Limonietea*). - Manuscript; subm. in VINITI 29.04.94, N 1064-B94, 22 pp. Moscow. (In Russian)
- Klotz, S. & Köck, U.-V. (1984): Vergleichende geobotanische Untersuchungen in der Baschkirischen ASSR. 3. Teil: Wasserpflanzen-, Flusssufer- und Halophytenvegetation. - Feddes Repertorium, 95 (5-6): 381-408.
- Kononov, K.E. et al. (1986): Communities of the class *Hordeetea* in Central Yakutia. - Classification of the USSR vegetation with the use of floristic criteria. - B.M. Mirkin (ed.): 172-184, Moscow Univ. publ. (In Russian)

Koroluk, A.Ju. (1993): Syntaxonomy of vegetation of southern Western Siberia. Hydrophytic and halophytic vegetation. - Manuscript; subm. in VINITI 11.06.93. N 1643-B93, 33 pp. (In Russian)

Korzhenevskiy, V.V. (1987): Vegetation of the cliffs in the Crimean coast of the Asov Sea. - Bull. Gosud. Nikit. bot. sada, 62: 5-10. (In Russian with English summary)

Korzhenevskiy, V.V. & Klukin, A.A. (1986): Phytoindication of relief of uplands in the Kerch peninsula, taking Kazantip as an example. - Bull. Gosud. Nikit. bot. sada, 98: 111-122. (In Russian with English summary)

Korzhenevskiy, V.V. & Klukin, A.A. (1988): A new association *Atraphaco-Capparidetum* from the Crimea. - Bull. Gosud. Nikit. bot. sada, 67: 13-20. (In Russian with English summary)

Korzhenevskiy, V.V. & Klukin A.A. (1989): Vegetation of blends of the Crimea. - Ecology, 6: 26-33. (In Russian with English summary)

Korzhenevskiy, V.V. & Klukin, A.A. (1990a): Sketch on vegetation of mud volcanoes of the Crimea. - Manuscript; subm. in VINITI 15.03.90. N 1429-B90, 23 pp. (In Russian)

Korzhenevskiy, V.V. & Klukin, A.A. (1990b): Vegetation of abrasive and accumulative forms of relief of the Crimea seacoasts and lakes. - Manuscript; subm. in VINITI 10.07.90. N 3822-B90, 108 pp. (In Russian)

Korzhenevskiy, V.V. (1992): The indication of modern processes of relief formation on the basis of the ecologico-floristic classification (on example of the Crimea). - Manuscript of the diss. doctor's degree (biol. sci.) Yalta, 1992, 291 pp. (In Russian)

Korzhenevskiy, V.V. & Klukin, A.A. (1991): Vegetation description of mud volcanoes of Crimea. - Feddes Repertorium, 102 (1-2): 137-150.

Lazdauskaitė, Ž. (1985): Taxonomic, phytocoenotic and chorologic analysis of the family Compositae (Compositae Giseke) of Lithuania. - Manuscript of the diss. master's degree biol. sci. Vilnius, 224 pp. (Russian)

Losev, G.A. & Golub, V.B. (1988): An addition to syntaxonomy of macrophytic communities of the Volga delta. - Manuscript; subm. in VINITI 10.11.86. N 7947-B88, 88 pp. Moscow. (In Russian)

Mirkin, B.M., Gogoleva, P.A. & Kononov, K.E. (1985): The Vegetation of Central Yakutian alases - Folia geobot. phytotax. Praha, 20: 345-395.

Mirkin, B.M. & Naumova, L.G. (1986): On the highest units of syntaxonomy of plain glycophytous meadows of the European part of the USSR. - Bull. MOIP, sect. biol., (91)5: 93-104. (In Russian with English summary)

Mirkin, B.M. et al. (1980): Vegetation of river flood-plains in the Mongolian People's Republic: the attempt of syntaxonomic analysis with the use of floristic criteria - Nauka, 284 pp. Leningrad. (In Russian)

Mirkin, B.M. et al. (1984): Second approximation of classification of the Mongolian People's Republic rivers' flood-plain vegetation. VI. Order *Halerpestetalia* ord. nova. - Manuscript; subm. in VINITI 24.04.84, N 4537-B84, 68 pp. Moscow. (In Russian)

Mirkin, B.M. et al. (1986b): Second approximation of classification of the Mongolian People's Republic rivers' flood-plain vegetation. - Biol. nauki, 5:83-91. (In Russian with English summary)

Mirkin, B.M. et al. (1991): Syntaxonomy of grass vegetation in the Middle Irtysh flood-plain. - Manuscript; subm. in VINITI 15.01.91, N 258-B9, 54 pp. Moscow. (In Russian)

Mirkin, B.M. et al. (1992): The flood-plain grasslands of the Muddle Lena-River. II. Classification. - Folia geobot. phytotax. Praha, 27:247-300.

Rebassoo, H.E. (1975) Sea-shore plant communities of the Estonian islands, Tartu, v. 1, 176 pp., v. 2 (tables), 136 pp.

Rebassoo, H.E. (1987): Biocenoses of islands of east part of the Baltic Sea, their composition, classification and preservation. v. 2. Applications and drawings. - Tallinn. Valgus, 231 pp.

Saitov, M.S. & Mirkin, B.M. (1991): On highest units of grasslands syntaxonomy of the class *Festuco-Brometea* Br.-Bl. et R.Tx.43 at the territory of the USSR - Bull. MOIP, sect. biol., 96 (1): 87-98. (Russian with English summary)

Saveljeva, L.F. & Golub, V.B. (1990): Floristic classification of vegetation of the Lower Volga limans. - Manuscript; subm. in VINITI 10.04.90, N 1977-B90, 72 pp. Moscow. (In Russian)

Schubenkina, E.Ju. & Golub, V.B. (1992): Syntaxonomic characteristic of some vegetation communities of arid deserts (North Turkmenistan) - Manuscript; subm. in VINITI 25.01.92. N 248-B92, 32 pp. (In Russian with English summary)

Shelyag-Sosonko, Ju.R. et al. (1989): Syntaxonomy of the cl. *Salicornietea fruticosae* of halophytic vegetation of the European part of the USSR. - Ukr. Bot. Z., 46(3): 5-10. (In Ukrainian with English summary)

Shelyag-Sosonko, Ju.R. & Solomakha, V.A. (1987): New syntaxa of the halophytic vegetation of the Ukraine. - Ukr. Bot. Z., 44(6): 13-17. (In Ukrainian with English summary)

Solomakha, V.A. (1981): Floristic classification of the Vorskli river basin meadows vegetation. Ukr. Bot. Z. 38(6): 66-69. (In Ukrainian with English summary)

Solomakha, V.A. & Shelyag-Sosonko, Ju.R. (1984): Floristic classification of the Ukraine halophytic vegetation. - Manuscript; subm. in VINITI 16.08.84, N 5965-B84, 30 pp. Moscow. (in Russian)

Tschernova, E.A. & Golub, V.B. (1992): Syntaxonomic characteristic of some vegetation communities of arid deserts of north part of Turkmenistan. - Manuscript; subm. in VINITI 25.01.92. N 250-B92, 29 pp. (In Russian)

Topa, E. 1939. Vegetația halofitelor din Nordul României. - Bul. Fac. de Științe din Cernăuți, 13: 1-80.